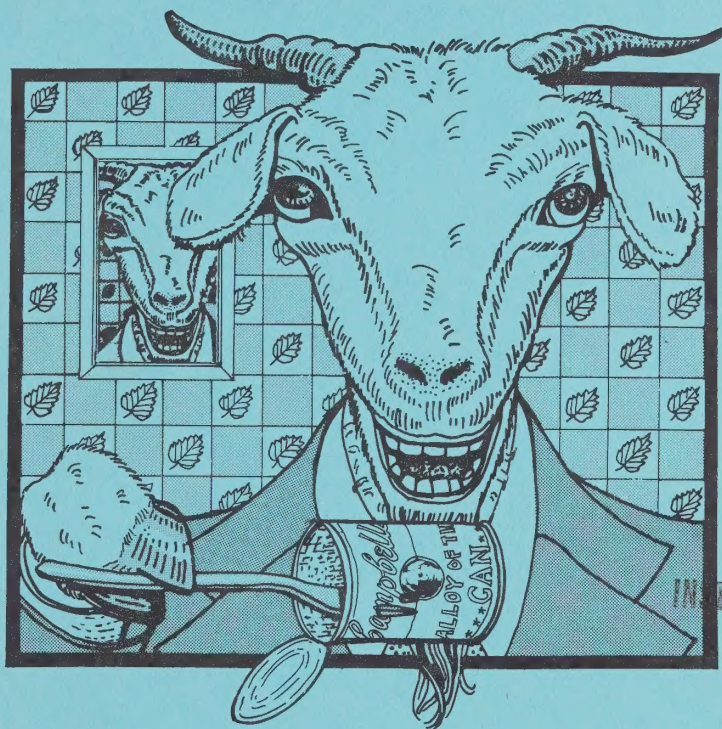


A Guide To Starting



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A Home Collection & Recycling Program

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OF BAY AREA
GOVERNMENTS



Association of Bay Area Governments

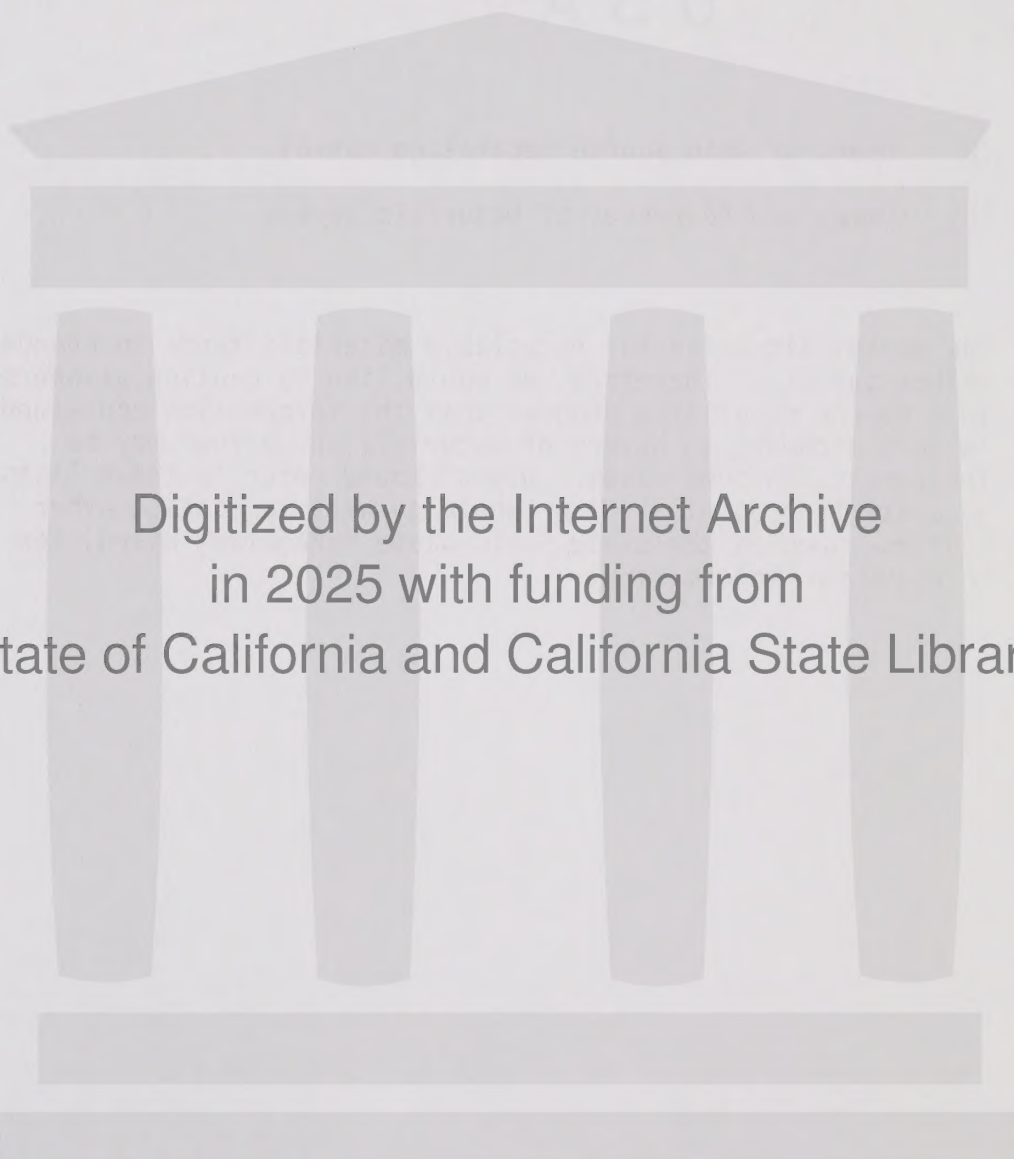
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February 1979

TO: Users of ABAG Source Separation Manual

RE: Names and Addresses of Materials Buyers

The market situation for recyclable materials tends to change rather quickly. Therefore, we would like to caution planners in a source separation program that the information contained in this document on buyers of materials and prices may be inaccurate, in some cases. Users should refer to these lists as a starting point. They would do well to contact other sources, such as the State Solid Waste Management Board, for more recent information.



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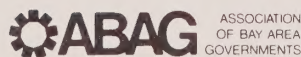
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SOURCE SEPARATION MANUAL

A Guide to Starting a Home Collection and Recycling Program

AUGUST 1978

PREPARED BY



UNDER TERMS OF CONTRACT NO. S6-042-76 WITH THE STATE SOLID WASTE MANAGEMENT BOARD

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ACKNOWLEDGEMENTS

The State Solid Waste Management Board made the preparation of this manual possible through a grant of Bay Area Solid Waste Management Project funds for public participation. The purpose of the grant was to raise public awareness of resource recovery issues and promote local implementation of programs and facilities to meet the State's resource recovery goals. Throughout the preparation of the manual, advice and technical assistance from the State Board's staff was invaluable.

The content of the manual represents the experiences and ideas of those groups and individuals who have pioneered recycling and home collection programs in Northern California communities. ABAG would like to acknowledge their tireless efforts and enthusiasm. In particular, the following people gave their valuable time to provide information for the manual and to review the draft document: Chuck Papke, E.C.ology of El Cerrito; Dick Evans, ENCORE; Cliff Humphrey, Ecology Action of Modesto; and Mike Anderson, Sonoma County Environmental Center.

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STILLBORN KIDNAPERS

The first of the two children was born on the 1st of January, 1900, at the residence of the mother, who was then residing at No. 10, St. James Street, Dublin. The child was born at full term, and was healthy and vigorous. It was named John, after the father, who was a well-to-do merchant.

The second child was born on the 15th of February, 1901, at the same residence. It was also born at full term, and was healthy and vigorous. It was named Mary, after the mother, who was a well-to-do housewife. The child was named after the mother, as the father was already named John.

The third child was born on the 1st of March, 1902, at the same residence. It was also born at full term, and was healthy and vigorous. It was named William, after the father, who was a well-to-do merchant. The child was named after the father, as the mother was already named Mary.

The fourth child was born on the 15th of April, 1903, at the same residence. It was also born at full term, and was healthy and vigorous. It was named Elizabeth, after the mother, who was a well-to-do housewife. The child was named after the mother, as the father was already named William.

The fifth child was born on the 1st of May, 1904, at the same residence. It was also born at full term, and was healthy and vigorous. It was named Thomas, after the father, who was a well-to-do merchant. The child was named after the father, as the mother was already named Elizabeth.

The sixth child was born on the 15th of June, 1905, at the same residence. It was also born at full term, and was healthy and vigorous. It was named Anne, after the mother, who was a well-to-do housewife. The child was named after the mother, as the father was already named Thomas.

PREFACE

In early summer, 1977, a two-day workshop entitled Garbage: Trash or Treasure; Recycler's Guide to Home Pick-up brought together Northern Californians interested in recycling. Considerable discussion on current recycling efforts and home pick-up programs yielded much useful information. It also became apparent that the collective experience of those groups and individuals in the Bay Area who had begun their own source separation programs should be recorded and made available to others. This manual is ABAG's contribution to encouraging new recycling programs in the San Francisco Bay Area. It was funded through a grant from the State Solid Waste Management Board.

ABAG is owned and operated by the local governments of the San Francisco Bay Area. It was established in 1961 to meet regional problems through the cooperative action of its member cities and counties. At present, 85 of 93 cities and 7 of 9 counties in the Bay Area are members. Twenty-five special districts, regional agencies and other government agencies are non-voting, cooperating members. ABAG serves an area of about 7 thousand square miles and nearly 5 million citizens.

ABAG is the areawide comprehensive planning agency for the Bay Area. Its approved Regional Plan provides a policy guide for planning of the region, including housing, environmental quality, economic development, transportation, health, safety and recreation.

ABAG developed a Regional Solid Waste Management Plan as a part of an integrated Environmental Management Plan that addresses air, water and solid waste problems for the nine counties. For over eight years, ABAG has been involved in solid waste management planning in the Bay Area. Most recently, ABAG has been designated by the State Solid Waste Management Board to be responsible for regional issues for solid waste management planning in the Bay Area to fulfill the requirements of the Federal Resource Conservation and Recovery Act of 1976. Other work has included participation in the Bay Area Solid Waste Management Project (BASWMP) in cooperation with the State Solid Waste Management Board. In the regional solid waste plan, policies and actions are recommended to reduce the amount of solid waste generated and to provide alternatives to landfill disposal. These policies suggest source separation programs as one alternative means of conserving resources and reducing quantities of wastes going to scarce landfills.

The ideas expressed in this manual include considerable assistance and advice from existing home pick-up source separation programs. It is our hope and theirs that you can learn from past successes and mistakes. We have purposely designed the manual in a loose-leaf format--to be a working document subject to update, revision or additions. In talking with other program leaders you may want to add notes or printed material of your own.

CHAPTER I

INTRODUCTION

AN INTRODUCTION TO GARBAGE

Conjuring up images of swarming flies, clanking trucks, and overflowing cans, garbage is something most of us would rather not think about. It is left for the collectors and scavengers without much thought as to how much is generated, where it is going, or how it is disposed. Increasing costs of disposal, decreasing availability of convenient disposal sites and more awareness of the negative environmental effects of garbage demand that we give new attention to the problem.

Garbage presents serious management problems to our communities. It has been trucked, piped, barged, and shipped; it has been dumped in canyons, lots, rivers, bays and oceans; it has been baled, burned, and buried. None of these, however, has been the solution to the problem of what to do with our garbage.

Scattered along the bay shores and inland areas of the San Francisco Bay Region are about 60 landfill sites, final repositories for most of the waste produced in the area. Although landfiling offers the most economical and convenient method for disposing of wastes, it is losing its advantages as costs of disposal rise and as the negative effects of this method of disposal become known.

Efforts to introduce alternative management systems are in their beginning stages. Faced with relatively untested methods, insufficient funds, and unstable markets, most communities have been cautious about starting new programs.

WHAT HAPPENS TO GARBAGE — THE CURRENT SOLID WASTE MANAGEMENT SITUATION IN THE BAY AREA

Six million tons of municipal solid wastes--discards from households, commercial and business establishments--are produced each year in the Bay Area. Collecting, transporting, and disposing of this vast amount of material are generally the tasks of 63 collection companies that operate in the nine counties.

The most common arrangement is for a city or county to contract with a private firm to provide services within a certain area. Often these contracts are exclusive, permitting only one firm to operate in one area. The only communities operating their own collection services are Berkeley, San Leandro, Dixon, and the Tamalpais Community Service District.

Once the garbage is collected, it is usually trucked directly to a landfill site. For some areas, a long haul distance necessitates the use of a transfer station, where the garbage is transferred to larger trucks. At the landfill the garbage is compacted and covered daily by thin layers of earth.

The site is used until filled. In the past, once the site was covered with the last two feet of dirt, it was considered closed. Common after-lives of landfill sites are parks and light industrial zones. In the next ten years, many currently operating sites in the Bay Area will be filled to capacity and closed.

Garbage is related to more serious problems than the litter and odor nuisances with which it is commonly associated. Not only are there practical problems of handling, transporting, and disposing of the wastes, but also less obvious problems related to the nature of waste, and to the higher levels of waste production.

Garbage is a state of "non-use" for materials. Broken down into various components--metals, glass, paper, rags, tires, oil, and organic matter--garbage can be considered a great store of resources. The once valued, useful products of the earth are haphazardly fused into unusable, unpleasant, uneconomical heaps left to decompose, to rust, and to be covered with thin layers of dirt in hopes they will not resurface.

Our society's dependence on landfilling as the major method of disposal has caused a number of problems:

- Once materials enter the fill, they are difficult to recover and reuse economically. The use of landfilling limits the possibilities of reuse and recycling.
- Considerable amounts of land are required. The value of the closed landfill is low--only limited uses of it are possible.

- The disposal of wastes in landfills has the potential to create air and water quality problems, litter, and public health dangers. Of the 60 landfills now in operation, about one-third have had some water quality problems at one time or another. Nearby waters have been contaminated by runoff or leachate. Air quality problems have resulted from some landfill operations in the Bay Area.
- The public has no incentive to reduce waste production. It contributes to the out of sight, out of mind consciousness.

As landfills in the Bay Area reach capacity, convenient and cost-effective replacements are harder to find. Public acceptability is low. The location of a site tends to reduce land values. Less land is available near populations, and land prices are higher. Transportation costs will increase as more distant sites are used.

WASTE REDUCTION AND RESOURCE RECOVERY

WASTE REDUCTION

By reducing the rate at which we produce garbage, we can decrease the total amount of solid waste that must be collected and disposed of. Less involved with the physical aspects of solid waste management, waste reduction programs are directed towards reducing waste generation through public awareness and education efforts. Waste reduction could be part of a comprehensive resource recovery program.

RESOURCE RECOVERY

Resource recovery systems are the major alternatives to landfilling. They are developed in an attempt to do what their name implies--to recover useable resources from the waste stream. The recovered materials are then recycled or used in the production of new goods. The impetus for resource recovery is both environmental and economic. Reuse and recovery reduces demands for natural raw materials, requires less energy in the production of new goods, and reduces the amount of materials requiring disposal.

Resource recovery systems are generally divided into two groups: pre-collection, such as recycling centers and separate pick-up services, and post-collection, which includes mechanized separation, pyrolysis, and the production of refuse derived fuel.

SOURCE SEPARATION

Source separation is the separation of materials at the point of generation before they enter the waste stream. It encompasses several different systems--recycling centers to curbside collection. Relative to complex high technology energy recovery systems, source separation is considered a low-technology, low-cost solid waste management system, dependent on human labor and relatively uncomplicated machinery.

Source separation is not new to the Bay Area. Recycling centers are a common feature of many Bay Area communities. Two cities have pick-up services for separated materials--El Cerrito and Santa Rosa; separated newspapers are collected in San Francisco with the regular garbage, and in Berkeley through a special service. (See Appendices A and B for brief descriptions of example resource recovery and source separation programs.)

Source separation is a refinement of the already occurring categorization of materials. To discard something, we have to decide that it is valueless and useless. To further separate waste materials is a minor shift in physical activity, but represents a major shift in motivation and attitude. These materials are no longer considered useless; they are not being separated to be discarded, but to be reused.

Source separation requires, first, the cooperation of waste generators to separate the recyclable materials. These materials then must be transferred to the individuals or companies who are willing to reuse them. A source separation program acts as a facilitator of this process. It provides an efficient way to move recyclables from those who no longer need them to those who can reuse them.

Programs may take several forms:

- Residential curbside collection of materials in a community.
- Recycling centers for drop-off of materials.
- Office paper recycling programs.
- Recycling of single specialized items (wine bottles, used vehicle oil).
- Purchase "buy-back" program (See Appendix B, El Cerrito program for description).
- Mobile recycling depots.

This manual focuses on the first of these types of source separation programs. Many of the topics would apply to other kinds of programs. It must be emphasized that this manual is a working document. It may be used to guide persons or groups starting new programs. Each community and situation is unique, however, and the program planners must tailor the program to these conditions.

CHAPTER II

WHAT CAN BE DONE

INTRODUCTION

As mentioned before, there are numerous ways to structure a source separation program. Financial resources, public awareness and acceptability, socio-economic factors and markets for recyclables vary with time and location. The planners of a new source separation program must respond to unique conditions to improve the chances of success. This manual will not propose a formula for planning and design. Rather, it will identify issues, suggest options, anticipate problems, and provide examples.

This chapter will identify and discuss briefly the following aspects of a home collection recycling program:

- WHO - participants in a source separation program
- WHERE - geographic area to be served
- WHAT - materials to be recycled
- HOW - program resources and operation

Decisions about each of these aspects will lead to an overall program approach.

The first step is to define program objectives. These objectives and the assumptions about available resources must be translated into a realistic program scope. Chapter III will assist in the actual planning, design, and operation of a home collection and recycling program.

Observation of communities that have experience in beginning source separation programs leads to some general comments on program success. The major requirements for a cost effective program are:

- Reliable, stable, regional markets for materials.
- Expertise and resources to plan and maintain an efficient collection system.
- Commitment to a well-organized, extensive, and long-lasting public awareness and public education program.

WHAT MATERIALS CAN BE RECYCLED?

The market situation determines the materials that can be included economically in a source separation program. The materials listed below are generally present in sufficient quantity and have established markets. Most are found in municipal solid waste and are contributed by residences, commercial establishments, and office buildings.

Appendix C includes examples and results from studies on waste generation and composition. It should be emphasized that these are not representative or average figures; each group starting a program will have to verify waste quantities and composition for its particular community.

PAPER

By weight, paper may represent 30-40% of municipal solid wastes. Newspapers, making up about 20% of wastepaper, are one of the easiest materials to recycle from the point of view of the generator, who is normally required only to stack and bind the newspaper. Most of this comes from private residences. Corrugated paper is about 25% of total wastepaper and comes mainly from commercial and industrial establishments. Office paper makes up about 13% of wastepaper. Other types of wastepaper, such as magazines, are often highly contaminated or for other reasons may not be feasible to recycle.

Markets for paper tend to be unstable and fluctuate with paper mills' demand for pulp and with seasonal construction markets. Below are some example price ranges of common types of wastepaper.

- Newspaper \$20 - \$ 50/ton
- White ledger (office) \$50 - \$ 80/ton
- Corrugated \$15 - \$ 60/ton
- Tab Cards \$90 - \$120/ton
- Computer printout \$80 - \$120/ton

Some communities have separate newspaper collection programs (Oakland Scavenger Company and Berkeley Ecology Center provide home pick-up of bundled newspapers). Others collect mixed paper. This latter material apparently brings much lower prices on the market. Newspapers left outside on the curb are particularly susceptible to being picked up by persons other than those authorized; this may significantly reduce volume and expected revenue.

GLASS

By weight, glass makes up roughly 10% of municipal solid wastes. It may be recycled either as whole glass for reuse (such as wine bottles) or as broken glass for remelting into new containers. This broken glass, or glass cullet, usually must be color-sorted and free from metal contaminants. Specifications are set by Glass Container Manufacturers' Institute (GCMi). Price per ton of color-sorted cullet is in the range of \$20 to \$30 per ton. The price may vary depending on the firm or group supplying the cullet. A processing capability may be needed when glass collection is part of a source separation program. For example, glass may need to be manually color-sorted and crushed to reduce volume.

ALUMINUM

Aluminum, mostly from beverage cans, makes up roughly 1% of the municipal waste stream. The market is relatively stable with prices about \$.15-.24 per pound depending on volume. Some buyers will purchase mixed materials containing aluminum and other metals and process to separate ferrous and non-ferrous portions. Even though it is a relatively small part of the waste stream by weight, the prices may make recovery of aluminum economically realistic.

Operators of a source separation program collecting cans may need to either separate aluminum from ferrous containers and bi-metal, or accept a lower price for mixed metal wastes.

BI-METAL OR "TIN" CANS

Ferrous metal represents about 8% of municipal solid waste. A "tin can" is actually steel with a "tin" or enamel coating. These can be "detinned" to obtain reusable tin and/or steel. The cans must be free from large amounts of organic matter and other metals (such as aluminum tops). It may be desirable to flatten cans to reduce volume.

Prices vary from \$20 to \$40 per ton for tin-plated cans and about \$10 to \$20 per ton for bi-metal cans. Markets require separation of bi-metal and other non-ferrous containers from steel "tin" cans to receive the higher price.

YARD WASTES

Lawn and tree trimmings can make a significant, seasonal contribution to residential waste. They may be readily recycled through chipping and/or

composting. Collection of yard wastes is now done by franchised collectors, by special pick-up services, or by separate groups that have their own routes and schedules (e.g., homeowner's association). Because of the variability of quantity, yard waste collection is not usually combined with other aspects of a source separation program. Also it is viewed as a service or convenience to residents and currently has low potential for economic return.

OTHER

Other types of wastes, less homogeneous and more widely dispersed in generation, may be recycled. Some examples are:

- Used motor oil
- Tires
- Textiles - (non-synthetic)
- Appliances and other mixed metal scraps
- Used cooking grease
- Wood wastes
- Plastics - in special circumstances
- Manufacturing scraps
- Used household goods - thrift store operation

These types of wastes are usually not included in a curbside collection and recycling program.

HOW DO YOU DETERMINE WHO WILL PARTICIPATE?

The participants in home collection recycling programs will be asked to change certain practices in a small way - i.e., separating their wastes. Some may already be doing this; to others, it may be a new and not entirely welcome practice. Acceptance and participation can be improved by a public awareness program, but success of initial phases can be increased by careful choice of participants.

SIZE OF PROGRAM

Assumptions about resources, funding and equipment will determine how many participants can feasibly be serviced. Established refuse collection services and source separation programs have gained experience in scheduling and time requirements. Some example combinations for residential collection are listed below:

- San Luis Garbage Co. of San Luis Obispo, California, collects about three and a half tons per day of residential recyclable refuse using a two-person crew with a pick-up truck and trailer.
- Redwood Empire Disposal Co. of Santa Rosa collects about three tons of recyclable refuse daily with a two-person crew and long wheelbase van with special containers.
- In Berkeley, the Ecology Center collects one to ten tons per day of newsprint with one or two 14-foot flatbed trucks with bins, using two-person crews. Volume fluctuations are generally geographically and socio-economically based.
- In Marblehead, Massachusetts, two three-person crews collect nine tons of recyclables a day. Collection and delivery takes about five and one-half hours per day.
- El Cerrito collects up to five tons/day using two 3/4-ton modified pick-up trucks; the one- or two-person crew works about six to seven hours a day.

SOCIO-ECONOMIC CHARACTERISTICS

There appears to be some correlation between socio-economic characteristics and participation rates in residential source separation programs. This may result from awareness of the solid waste problem, perceived benefits, quantity of wastes generated, and community feeling. EPA believes that greater participation in the Marblehead program, when com-

pared with Somerville, relates partially to socio-economic factors. Marblehead is a moderate to high-income, well-educated community in which most people own their homes. Somerville people have lower incomes and fewer years of education; most are renters. Lower income areas are also less likely to generate as much newsprint, for example, as higher income areas. (See brief descriptions in Appendix B of Somerville and Marblehead programs.)

VOLUNTARY VS. MANDATORY

It has not been conclusively determined that voluntary or mandatory programs result in higher participation. One approach is to begin a program on a voluntary basis to gain public acceptance and follow with an ordinance if the program is well-received. Experience has shown that high participation is not necessarily achieved at the outset through an ordinance; the duration of a program is more significant.

SUBSCRIPTION VS. FREE

Some programs operate on a subscription basis and only collect materials from paying subscribers. This would be one way of knowing ahead of time who the participants would be. Holding off the start of the program until a certain level of subscription is reached is one way of raising initial capital and offers a good indication of potential success.

HOW DO YOU DETERMINE WHERE PROGRAM WILL OPERATE?

The geographic area that will be served by a program again relates back to the initial assessment of resources and assumptions about the type of program being implemented. Both the practical and the political side must be considered.

PUBLIC AND INSTITUTIONAL CONSIDERATIONS

Groundwork to determine the degree of cooperation from local officials, private industry, and the public is necessary. EPA observed that Marblehead already had a recycling program; therefore, residents were more familiar with the concept. In Somerville, it was an entirely new idea and problems with labor caused interruptions in service and loss of program continuity. Sensitivity to these institutional factors and the degree to which they offer support would be valuable in selecting an area for a new program. A survey could also aid in determining an area where citizen participation will increase chances of success.

PRACTICAL CONSIDERATIONS

Size of the service area will be a function of assumptions about program capabilities. Equipment and labor are used more efficiently in denser areas. Topography and street pattern may influence choices. Flat areas may be more energy-efficient and therefore less costly for a beginning program. Hill areas may require different equipment for collection. Availability of sites for the processing center may influence service area for residential pick-up in order to minimize travel times. Distance to material markets also may be a factor to consider.

Some of the concerns in starting a new program might be:

- Endorsement by the local elected officials and/or commitment of resources.
- Degree of involvement of existing refuse collector, whether public or private, and the collector's perception of a program as complementary to or competing with its services.
- Public acceptance of the concept of source separation. Interest and willingness of people to participate.

HOW WILL PROGRAM OPERATE?

Chapter III will discuss in more detail the approaches in setting up a home collection and recycling program. This section simply identifies some basic elements of a program and suggests issues, problems and alternatives.

After the goals and objectives have been determined, program organizers must inventory available or committed resources and demands on these resources. Depending on the type of program, a certain amount of trading-off may be possible. For example, if labor is readily available, then it may be reasonable to perform certain operations manually rather than to invest in processing equipment.

LAND

A site or sites will be required for material storage and processing, equipment storage and program administration. The following are issues related to land needs:

- Location
- City or county restrictions - ordinances, use permits
- Ownership
- Space requirements
- Marketing/storage logistics and needs
- Insurance

LABOR

Managers of home collection and recycling programs already underway acknowledge the importance of the collector crews to a program's success. In Somerville, service was interrupted due to union problems; this may have been a factor in lower participation. One reason cited for early success in a Santa Rosa program was training and motivation of the recyclables collectors. In addition to collection crews, other staff may be required for administration and public education.

EQUIPMENT

Equipment needs must be determined based on program size and available funds. Options for obtaining equipment may include leasing, leasing with option to buy, or purchasing outright--new or used equipment.

CAPITAL

An early step in designing a home collection and recycling program is determining funding requirements and funding sources. Start-up funds will be required before any return on sale of recyclables can be expected. Each program will be structured uniquely but certain types of demands on the capital can be predicted.

Program revenues may take the form of cash from grants, or, once the program is underway, sale of materials or of in-kind revenues.

MARBLEHEAD
ANNUAL COSTS AND REVENUES
(Dollars)

	<u>Initial System</u>	<u>Current System</u>	<u>Planned System</u>
Refuse Collection Labor*	131,000	131,000	98,250
Recycling Collection Labor*	-	65,500	43,700
Recycling Equipment (operation and depreciation)	-	10,500	10,500
Refuse Equipment (operation and depreciation)	21,000	21,000	15,750
Disposal	189,500	142,100	142,100
Recycling Bins	-	5,900	-
Materials Revenues**	-	(45,000)	(45,000)
Net Cost	341,500	331,000	265,300

* Excluding spare personnel, management and administration.

** Assuming the year-to-date average price of \$18/ton of recycled materials.

WORK ITEM	Redwood Empire Disposal Corporation	State Grant	City of Santa Rosa	Total
Public Relations/Information a) Northwestern Graphics b) Sonoma County Arts Council		\$ 9,890 4,000		\$ 13,890
Project Execution (Field Pick-Up) a) Equipment Cost (Lease Basis) (Trucks, Can Smasher, Forklift) b) Labor Seven People @ + 25% Fringe Benefits (\$11,220 Each) c) Operating Cost Fuel (10 mos) Insurance d) Office Supplies e) Utilities f) Repair, Maintenance & Tires g) Clerical, Secretarial (8 Hours/Week) h) Safety Officer (3 Hours/Week)	\$11,547 4,500 1,500 360 900 3,100 2,291 947		\$78,540 (CETA)	103,685
Report Preparation and Printing		3,000		3,000
Administration a) Project Director b) Project Manager	9,321		4,840	14,161
Purchase and Distribution of Containers		73,110		73,110
TOTAL	\$34,466	\$90,000	\$83,380	\$207,846

CHAPTER III

HOME COLLECTION AND RECYCLING PROGRAMS

**PLANNING,
START-UP,
AND
OPERATION**

INTRODUCTION

Source separation and recycling are not new ideas. Throughout history man has, in a variety of ways, removed items from so-called wastes to be reused or recycled. In our affluent society, there is little apparent economic incentive to recycle, and manufactured items often are not directly reusable by the first user. Source separation programs, in effect, are reintroducing this concept to people and asking for their cooperation. However, new programs now are faced with different attitudes about consumption and waste, with sophisticated economic factors, with established ways of dealing with garbage, and with a complex urban environment.

Numerous source separation programs are underway around the country. Many of these were planned and developed without the benefit of guidance from or experience of other programs. Each program needed to fit the unique situation and required considerable imagination on the part of the initiators. The intent of this chapter is to outline a planning process for a home collection and recycling program. It will suggest approaches and considerations, but does not pretend to provide tried and true solutions.

PROGRAM PLANNING

The planning phase of a proposed home collection and recycling program is essential for a well-conceived approach. Planning includes assessing what a program has to start with, where the planners want it to go, and what the choices are for getting there. It sets the context and ground-work for the many decisions that determine the structure of the program and play a large part in its success.

GOALS AND OBJECTIVES

Goals are useful as a measure of program success or to promote participation. They may reflect benefits of a program in qualitative or quantitative terms. This type of program may have general goals as well as more specific objectives. The most meaningful ones would be stated in relation to the program itself.

For example, a general and perhaps obvious goal of a source separation program would be to promote the conservation of natural resources. A home collection program would be one means toward this end; but not the only one. A program objective might be expressed as a percent reduction in wastes going to landfill by a certain time.

Since goals are not always immediately attainable, other measures may be used to evaluate program success. Some of the criteria commonly used are:

- participation rate, especially an increase over time
- degree to which program is self-supporting
- degree to which program saves people money for solid waste management
- types of materials to be recycled
- public acceptance

These measures may provide a qualitative, or in some cases a quantitative, indication of success.

Participation rate is one of the more frequently used measures. The percent participation of the total number of residences in the area served by a home collection and recycling program can be derived in several different ways. Comparisons of participation rates among separate programs may be misleading unless the assumptions and method are

the same. For instance, calculation of participation could be measured in any of the following ways, potentially yielding different results:

- the reduction in the total municipal solid waste stream
- the number of households that set out recyclables
- the total number of households that set out recyclables over a period of time
- the number of set-outs on a given route
- the accumulated number of set-outs for a period of time

Whatever approach is taken, the assumptions should be clear and the method should remain uniform over the geographic area and over time.

IDENTIFICATION OF AVAILABLE RECOVERABLE RESOURCES

Chapter II listed examples of the types of materials that can be recovered. An important step in planning is to match recoverable resources with markets. It may be wise to select recyclable materials where steady markets are reasonably assured. The flip side of that concern, however, is making sure that the program can supply the buyers with a constant supply.

How Much and What Kinds of Wastes are Generated?

A waste composition analysis can give an estimate of expected types of wastes and volumes. Since the waste stream composition of a community or area depends on source, income, season, etc., a review of the potential target areas and population waste characteristics is important.

Information on amounts of materials might be obtained from:

- Franchise refuse collectors for figures on volumes collected
- Disposal site operators for types and volumes received
- Actual sampling of wastes to determine composition by weight and volume. This sampling should take into account variables such as season, income, source (residential, commercial, industrial).

(See Appendix C for recent study results on waste generation and composition.)

What are Other Demands on Waste Stream?

Within a potential target area there may already be competition for these materials that could alter the profile of available recoverable materials. New programs or projects may claim wastes in the future, thereby altering future volumes or composition, such as:

- Other recycling programs that draw on the same area.
- Service groups that do sporadic collections as money-making ventures (such as paper drives by youth or church groups).
- Large scale garbage-to-energy facilities that would require a large and stable volume of wastes over a long time span for cost-effective operation.

Finally, the viability of a program may be altered as public education influences consumers. Waste reduction will mean less material available for recycling and reusing, as well as disposal.

What Percent of Waste can be Expected to be Recovered?

This question simply asks what level of participation can be expected. One method of estimating percent of participation is through a survey of the target area. (Appendix D shows an example of a survey card sent out city-wide to determine expected participation.)

A rough procedure for estimating recoverable wastes is outlined below:

1) Collect information or estimate each of the following:

- Number of housing units in target area
- Total quantity of waste generated in target area
- Composition--types of recoverable materials expressed as a percent of total
- Pounds per capita per day of waste generated
- Average household size in community.

2) Determine the expected pounds of waste per residence per day.

$$(\text{Pounds per capita per day}) \times (\text{average household size}) = \underline{\text{Pounds per day per residence}}$$

3) Based on survey, estimate participation rate, expressed as a percentage. Calculate number of residences that will participate.

$$(\% \text{ participation}) \times (\text{no. of residences in target area}) = \underline{\text{No. of residences expected to participate}}$$

4) Determine total volume of wastes from participating residences.

$$(\text{Participating residences}) \times (\text{Pounds per day per residence}) = \underline{\text{Total waste by weight}}$$

5) For a given recoverable material determine expected volume.

$$\begin{array}{lcl} \text{(\% of total waste} & & \text{(Total waste from} \\ \text{stream for a re-} & \times & \text{participating} \\ \text{coverable material)} & & \text{homes)} \end{array} = \frac{\text{Total amount for a}}{\text{given recoverable}} \\ \text{material}$$

This process can be repeated for each type of recoverable material to develop estimates of quantities expected to be recycled.

RELATIONSHIP TO EXISTING WASTE MANAGEMENT SYSTEM

Solid waste collection and disposal is the responsibility of local governments and, in some cases, special districts. Most cities in the Bay Area sign a franchise agreement with a private scavenger company to provide municipal refuse collection. Operators of a collection and recycling program who intend to collect materials from homes must establish an understanding with the public and private entities involved. Support for the program from local officials and from the existing collection agency or company may give added credibility and public acceptance. In addition, the possibility of cooperation, joint involvement, or other commitment should be explored.

In talking with local officials, staffs of city and county departments, and private sanitation company personnel, these aspects should be considered:

- Acceptability of a source separation program.
- Willingness to support program - through resolution, technical assistance, funds, land, in-kind services.
- Possible institutional arrangements or agreements for cooperation.
- Legal obstacles to program, such as ordinances, ownership of garbage, etc.

For example, in El Cerrito the City Council voted to support a demonstration home pick-up recycling project with in-kind services and adoption of a recycling goal. In Santa Rosa, the source separation program was initiated by the franchised garbage collector in cooperation with the City.

The State has established a guideline for all local governments to reduce wastes going to landfills by 25% per capita by the year 1980. ABAG's Environmental Management Plan, approved by the Bay Area's local governments in June 1978, includes a goal of 30% reduction by 1982. Source separation programs, if properly presented with full public support, could be attractive and relatively low-cost means of moving toward these goals.

MARKETING

Like any business enterprise, a marketing scheme is vital to the program's success. The identification of markets should be carried out early in program planning; this analysis will also help determine items feasible to include in a beginning program. Stable markets present less risk to a program than markets that fluctuate. A buyer who is willing to negotiate long-term contracts may be a better bet than one who is not, even if a higher price is available without a contract.

EPA has suggested the following marketing approach for recycled material.

a) Market Identification

Task - identify potential users and initiate discussion

Output - data on:

- Promising buyers
- Quantities salable
- General quality requirements
- Approximate values

Reminders -

- Use appropriate expertise
- Know waste stream and recovery potentials
- Be thorough
- Understand user needs
- Be aware of legal obstacles

b) Preliminary Commitment

Task - negotiate specific terms; obtain commitments

Output - letter of intent; memorandum of understanding

Reminders -

- Understand pricing
- Can specifications be met?
- Complete before final technology selection

c) Formal Contract

Task - obtain competitive bids; develop contract documents

Output - signed long-term contracts with floor prices

Reminders -

- Follows selection of technology, financing ownership/operation, etc.
- Probable contractor responsibility

Formalizing market arrangements can allow both the recycler and the buyer to set acceptable and predictable terms. (Included in Appendix F is an example of a letter of intent from EPA's Resource Recovery Technology: An Implementation Seminar.) Some of the points that need to be considered are:

- Price--some form of guaranteed price or price range is important. A "floor" price would guarantee a minimum payment for acceptable materials even if the market dropped below that price. Another option is a floor price plus a guaranteed percent of the market price above that amount.
- Definition of acceptable levels of contaminants--this should provide specific criteria on the acceptability of shipments of materials.
- Guaranteed volumes of materials, frequency, and form--the supplier should know whether a minimum volume can be provided and how often. Also establish the most compatible form for delivering materials; this may determine the kind of processing and extent of storage the recycling center will need.
- Length of contract--a long-term contract will lower risk for the materials supplier. In the event prices drop the buyers may have to absorb the price difference. They may be reluctant to accept this risk over a long period.

RESOURCES AVAILABLE TO NEW PROGRAM

An early step in designing a home collection and recycling program is determining funding requirements and funding sources. Start-up funds will be required before any return on sale of recyclables can be expected. Each program will be structured uniquely, but there are certain types of demands on the capital that can be predicted.

- Public awareness activities - for project staff or consultants; brochures, advertising, printing, displays, presentations.
- Equipment - collection, storage, delivery and processing; the operation, maintenance and depreciation.
- Operating expenses - fuel, insurance, shipping costs, supplies, utilities, and general overhead.
- Site improvements and land - paving, fencing, buildings; rent or lease payments.
- Wages - project design and management, collecting crews, handlers at centers, secretarial; including fringe benefits.

The program initiators need to make an honest assessment of available revenues, in-kind services, grants and donations, etc. The realities of available funds may determine to a great extent the dimensions of the proposed program. New ways to cut initial costs should be explored throughout the planning phase. It means being aware of funding sources, of opportunities for donations that could mutually benefit the program and donor, and of new uses for old equipment or facilities. Possible sources are listed below.

- Private collection companies.
- Private industry with interest or past involvement in using recyclables (e.g., aluminum industry, metal scrap dealers, etc.).
- Federal programs - such as Comprehensive Employment Training Act (CETA), EPA, DOE, revenue sharing.
- State grants - through State Solid Waste Management Board (SB 650, RCRA, etc.).
- Local governments - through contribution of staff, land or building space, equipment, or money. This is particularly likely if the City sees that the program will reduce its solid waste disposal costs.

Justification for a new program can be based on estimates of revenues from material sales and expected savings in solid waste management. However, before start-up, the initiators must rely on shrewd use of what is there.

DEFINING SCOPE OF A HOME COLLECTION AND RECYCLING PROGRAM

Up to this point, planning has consisted of identifying objectives, inventorying resources, and assessing markets. The program planners should then have a set of basic assumptions upon which to build a program. At this stage, there should be a good sense of:

- Potential markets
- Political situation
- Level of involvement by local government and private refuse companies
- Expectation for funds and in-kind services
- Volumes of wastes and their composition
- Expected participation.

In determining the scope of the program, choices and trade-offs among alternative physical systems and management approaches must be made. This determination involves being realistic about the available money, equipment, and labor; it means being sensitive to public acceptance and political climate; it requires expressing program objectives in terms of people, schedules, trucks, markets and responsibilities.

Decisions need to be made about:

- Type of materials to be recycled
- Participants who will be asked to source separate--target area
- Type of collection system, including routes and frequency
- Processing requirements to meet buyers' specifications
- Labor requirements

As decisions are made about these variables, an overall program framework will begin to emerge. It may be a single material program using offered assistance and equipment from a sanitation company. It may be a multi-material source separation program with CETA employees and second-hand pick-up trucks. Going through the process outlined above should result in an idea of what can reasonably be accomplished by the proposed program.

DESIGNING THE PHYSICAL SOURCE SEPARATION SYSTEM

The physical system includes a configuration of equipment, personnel and land designed to collect, transport, process and store materials and to administer the program. No standards are available for determining an ideal system. In fact, new programs starting on limited budgets may avail themselves of offered equipment and land that, while not necessarily the best choices, will allow scarce funds to be spent elsewhere.

Elements of the physical system are discussed below. Examples from existing programs are added to illustrate possible approaches.

Land

A site or sites will be required for material storage and processing, equipment storage, program administration. Issues related to land needs include:

- Location - Conveniently or centrally located to service area to minimize travel times. Siting a recycling center in a convenient location will have to be weighed against surrounding land uses, acceptance by neighbors and costs of location. El Cerrito's center is in the geographical center of the city at an abandoned quarry site. Relationship to market is also a necessary consideration.
- Restrictions - City or county codes may constrain available sites and this type of facility may be excluded in residential areas, for example. Prospective sites need to be checked with local government staff on zoning and permitted uses and other applicable local ordinances.
- Ownership - The city may have suitable vacant land; refuse collectors may cooperate by supplying a portion of their land. Other options are to seek donation of property, to lease land, or to actually acquire land. The last option is the most expensive but ensures continued use of site.
- Space requirements - Amount of land required is related directly to size of program, quantities of recyclables handled, and needed storage and processing space. The marketing plan for recyclables will determine how long materials will be stored on site and in what form, and in turn, the space needs. For example, the recycling program in El Cerrito has an expanded site of about 38,000 sq. ft. containing parking for 12 to 15 vehicles, unloading area, storage areas, glass crusher, public drop-off area, and office space. Included is a site plan that shows how one recycling center incorporates the different aspects of its program.

Labor

Managers of source separation programs already underway acknowledge the importance of the collector crews to a program's success. In Somerville, service was interrupted due to union problems; this may have been a factor in lower participation. One reason cited for early success in the Santa Rosa program was training and motivation of the recyclables collectors. In addition to collection crews, other staff may be required for administration and public education.

- El Cerrito started with six full-time employees for collecting and processing materials. In the second phase it has expanded to 12 full-time positions, including two full-time public relations persons. Eleven of the twelve positions are covered by Federal CETA Title VI funds.
- Santa Rosa has seven employees and a program director with a total labor cost of \$84,000. This staff was the City of Santa Rosa's contribution to the project.



CITY DUMP

(Bottom)
QUARRY EDGE

RECYCLING CENTER PLAN

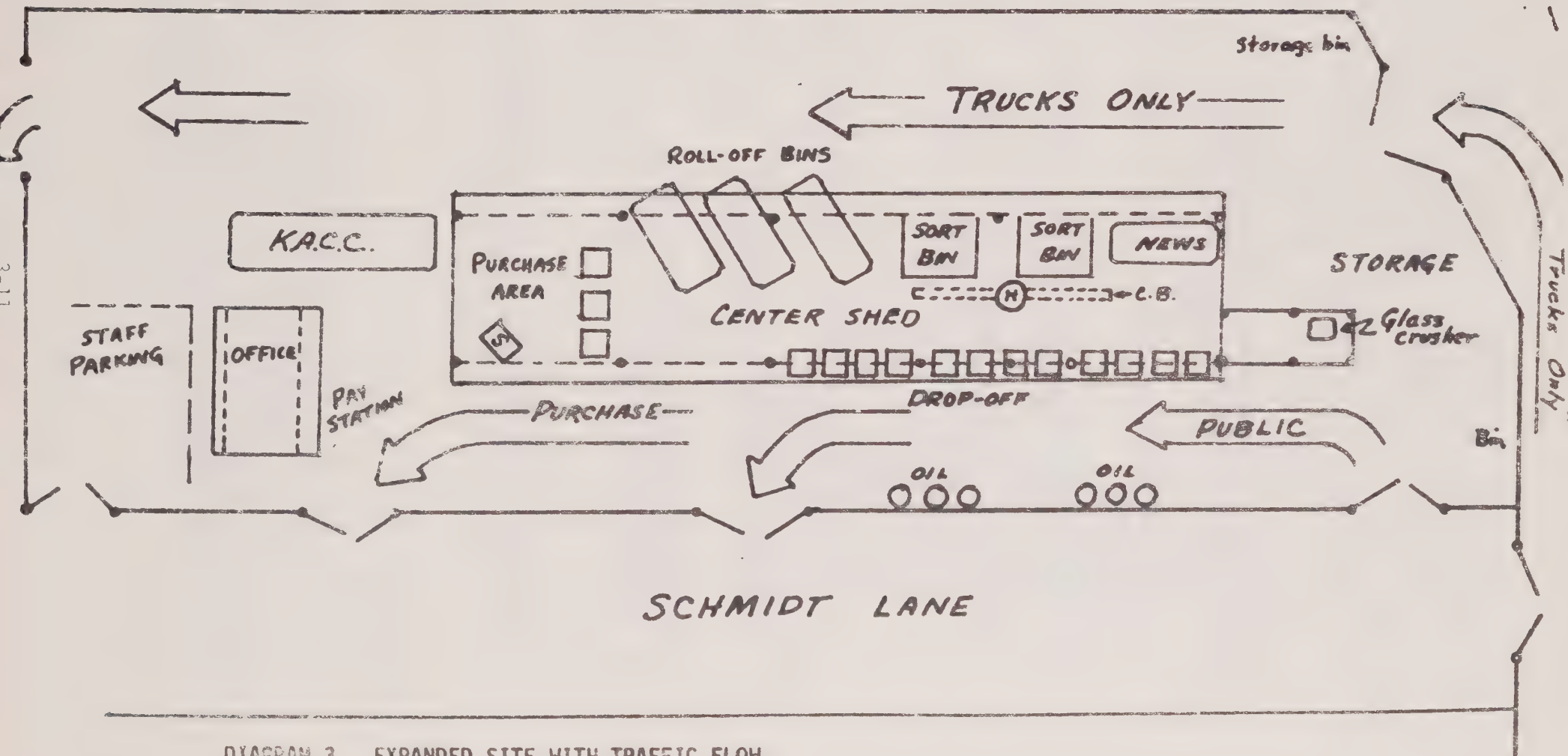


DIAGRAM 3. EXPANDED SITE WITH TRAFFIC FLOW

- Some programs use existing personnel, backup crews, or part-time labor so that initial start-up costs are minimized.
- Marblehead used a combination of existing refuse collection labor and additional recycling collection labor. The cost for two three-person crews per day was \$262. Assuming 21 collection days per month the monthly cost was about \$5,500 for collection labor.
- In Somerville two three-person crews and one four-person crew cost \$429 per day; 21 collection days per month results in a monthly total of about \$9000 for collection labor.

The following concerns should be addressed in determining labor requirements and costs:

- Existing collection personnel vs. additional crew members - When the program is planned in close cooperation with the city or private collector, existing collectors may be diverted to the recyclable collection. They may have the added advantage of being experienced in refuse collection. With completely separate routes and scheduling, new crews may be required.
- Sources of funding for labor - CETA has been used to hire collection personnel. The Economic Development Department may provide funds. State funds were granted to selected demonstration source separation projects. In-kind labor services may be available.
- Volunteer assistance - This could be used in the public awareness program. Service clubs, youth groups or school children could be approached to distribute flyers, for example.
- Part-time vs. full-time labor - Savings may be realized by hiring persons on a part-time or as-needed basis, particularly in the early stages when the exact times required for specific tasks are unknown.
- Other sources - High school students, college students, traffic offenders, retired people. Workers not hired on a regular basis, however, will need close supervision and may not be as effective for tasks needing training and continuity.

Equipment

Volumes of recyclables, market specifications and hauling distances must be considered in choosing equipment. The first question is whether to use new or modified equipment. The most obvious difference is cost. A new truck may cost \$20,000 as opposed to adding racks or bins to older equipment at considerably less. Investing in new equipment to start a home collection program also represents a considerable initial cost for an experimental program with success as yet unproven. On the other hand,

specially designed equipment, as in the Somerville and Marblehead programs, may increase efficiency of collection. Existing equipment may provide significant cost savings. For example, one program used refuse collection vehicles on the fifth day of the week when they normally were idle. Or relatively inexpensive modifications may be all that are needed to start a program. Racks on the side of existing refuse trucks may cost from \$80 to \$230. Other options for obtaining equipment include leasing or leasing with option to buy.

Below is a list, not necessarily inclusive, of types of equipment that may be desirable or required depending on the program design. These items would be used mainly in a curbside-pickup multi-materials program.

- Recycling containers - for household use. May have compartments for separated materials and wheels for ease of moving.
- Collection vehicles - A variety of trucks and vans, some modified, others specifically designed, are used in existing programs.

Examples:

- El Cerrito is using a two-truck system for collection and delivery. Each 3/4 ton pick-up has a modified low flat bed and carries four bins for recyclables and mixed trash. (Purchase of two used trucks and modifications to them cost about \$6,400.)
- Marblehead and Somerville programs were provided by EPA with special three-compartment collection vehicles, valued at \$25,000 - \$28,000 each. They were open-top rear-bucket loading vehicles, having either 20 cu. yd. or 16 cu. yd. capacity. They could hold about 3-1/4 tons per load.
- Unloading equipment - Forklifts can lift individual bins to rotate and dump them into sorting bins or bulk containers. Hook and hoist systems can be used in combination with a truck system fitted with bins that tilt. (Prices quoted by El Cerrito are \$8,500 for used fork-lift with swivel fork.)
- Processing equipment - This could include scales for materials and equipment to prepare them for markets, i.e., metal shredders, baling equipment.

Examples:

- baler for paper
- magnetic separator (and metal shredder)
- glass crusher for reducing volume of glass before shipping (El Cerrito's mechanical crusher processes 7 to 10 tons of glass per hour for a five-fold reduction in volume).

Note: Glass crushers send glass dust into the air and pose a serious health hazard. Equipment and costs for providing safe working conditions should be investigated before acquiring.

- Storage bins of various sizes - Either for drop-off by public or for transporting materials.

Other types of source separation programs may require more specialized or specially adapted equipment. For example, containers for storing used oil, chippers for wood wastes, racks for newspaper collection, desk top bins for office paper programs. In most cases, since available containers can be adapted for use, this will not require additional cost.

PROGRAM START-UP

The planning phase involved sorting through alternative approaches to a home collection and recycling program and focusing on a chosen program scope and design. Program initiators can now turn to the logistics of getting the program underway.

In this section aspects of starting a new program are examined. More attention is placed on those tasks that are unique to recycling programs or that are particularly crucial to their success.

LEGALITIES

The program organizers should carefully check existing legal requirements for those that either support or obstruct a home pick-up system, and anticipate new regulations that may enhance a program's success.

Who Owns the Garbage?

Since most cities and communities in the Bay Area have mandatory garbage collection, the franchised collection company (or in a few cases the city) "owns" the garbage once it is set out for pick-up. Program managers that propose to take a portion of this garbage need to check with the franchising agency, i.e., the city, county or special district, to see what kind of legal arrangement, if any, needs to be made with that agency or with the private collector.

Local or State Regulations-Existing

Local regulations administered and enforced by city and county departments must be complied with. Those that could apply to a source separation program, depending on the nature of the system, include:

- building and construction codes
- land use and zoning ordinances
- fire and safety regulations
- refuse storage and collection regulation
- electrical, mechanical, plumbing codes

The program planners should check with the city or county planning or public works departments to find out which requirements apply and what permits and licenses are needed. Many local zoning ordinances classify all solid waste activities as industrial; recycling centers, in these cases, would only be allowed in heavy industrial zones.

The State of California also has regulations for solid waste, for vehicle operation, and for workers' safety that need to be checked. In some cases, these regulations may be enforced by a local agency. For example, each local jurisdiction is required by California law to designate an agency to enforce state regulations for storage, handling, transport, and disposal of solid waste. Many cities have designated one agency, usually the county public health department, to carry out this responsibility for both cities and county.

Local Ordinances - New

Some source separation program operators have found that new ordinances, directly supportive of the program, are strongly desirable. The City of Marblehead passed an ordinance making the separating of residential garbage mandatory. Opinions differ on the effectiveness and desirability of mandatory participation. (See Appendix G for an example ordinance.) Some recyclable materials, especially those placed on the curb, may be tempting to unauthorized persons. Some cities have enacted anti-scavenger ordinances aimed at discouraging this theft of materials. The Town of Hempstead, New York, passed such an ordinance specifying that wastes placed on the curb are the property of the city and that offenders are subject to fines. (See Appendix G.) The Ecology Center, Berkeley, has found the city's "anti-scavenger" ordinance to be crucial to its newspaper recycling program.

Contracts and Agreements

As discussed before, formal agreements with materials buyers may be important depending on the size of the program. These contracts should be finalized before collection of materials begins. (See example in Appendix H.) Depending on the structure of the program, other contractual arrangements may be desirable to ensure continued use of land, equipment, and in-kind services.

OPERATION —

SCHEDULES, ROUTES, PROCEDURES, RESPONSIBILITIES

Aside from choice of equipment and decisions on labor force, thought must be given prior to start-up about the procedures, schedules, routines and techniques to be followed in actual operation. When a regular residential pick-up program is proposed, a consistent long-term schedule that

participants can depend on is particularly important. The procedures that participants must follow in separating recyclables have to mesh with processing equipment and market requirements. In effect, a routine must be designed to assure a steady flow of materials from the waste generator to the markets. The following items should be considered:

- Initial start-up should be planned for a time of year when weather conditions are favorable. Winter rain or snow increases workload.
- Schedule for pick-up, including frequency.
- Establishment of routes so that vehicles can handle tonnage generated (may vary considerably depending on actual participation).
- Hours of operation for recycling center.
- Procedures for collection, processing and transporting.
- Safety considerations in operating equipment.
- Guidelines for participants in program on acceptable items and placement for collection.
- Delivery to buyers.
- Administrative procedures.
- Training of workers in procedures and safe practices.

PUBLICITY AND PUBLIC AWARENESS

An evaluation of the EPA funded Somerville and Marblehead programs concluded that maximum participation could be achieved by first minimizing inconvenience and second, by planning intensive community awareness campaigns to generate and maintain citizen interest. Public awareness and education ranks as one of the most important aspects for program success. The public needs initial notification and explanation of a new program as well as on-going progress reports, once underway, to maintain interest and cooperation. The specific program requires promotion in the media to ensure that the logistical aspects of what, when, where and how are known. In addition, the program will provide a means for educating people on the benefits of waste reduction and source separation. It should raise people's awareness of the solid waste problem, the possible solutions and ways that individuals can contribute. (See Appendix I for examples of source separation program promotional material.)

Some examples of public relations and public education programs, and the kind of financial commitment involved are listed below:

- Marblehead used a multi-media approach, including newspapers, posters, letters, bulletins, radio spots and personal contact. They expected to continue this public education program for several years using up to 10% of annual program revenues each year (about \$4,000).
- Santa Rosa's proposal to the SSWMB included \$9,800 for publicity and public awareness, including money for a consultant. They also proposed \$400 for a school education program.
- El Cerrito proposed \$12,000 in their public awareness budget, as well as a full-time publicity director.
- In Somerville, about 2,300 person-hours were spent in a nine-month period on public awareness. In Marblehead, about 540 person-hours were expended. This was without the benefit of guidelines; comparable efforts with guidelines would probably require less time.
- San Luis Obispo spent about \$12,000 on their public awareness program.

The publicity program should answer the following questions:

What is a source separation program?

Why should I participate? And how?

Explaining the program and responding to questions can be achieved through:

- Effective use of the media.
- Interaction with community groups.
- School programs.
- Commercial--local merchants participation.
- Direct communication with individual residents.

A progress report on the community awareness programs for Somerville and Marblehead explains in some detail the approach taken in these communities. The following discussion is taken from that report. (Greater detail is included in Appendix J.)

Planning the Awareness Program*

Planning is a must for a successful awareness program. Each program will have its own individual focus consistent with the specific needs of the community.

- A public attitude survey is a useful way to focus on community needs and attitudes, and to identify the types and mix of program elements most suitable for the community.
- The program team should include local people, preferably residents of the community who have lived in the town long enough to know something about local newspapers, community groups and commercial establishments. Such program teams who are paid (albeit at low hourly rates) bring to the program considerable interest as well as communications skills. In programs that include exclusively volunteer efforts, or in which people do not have large amounts of time to spend, it is of utmost importance to focus the program effort on those activities that will have an important impact on the community and that can be performed well with available resources.
- Maintaining community contact after the recycling program has started (to sustain interest and for feedback) is essential. It is important not to expend the entire awareness effort (and budget) before the program begins.
- Since a community recycling program involves both official and unofficial participants, it is important in the beginning to clarify the role and authority of the program awareness team. They should have as much flexibility and authority as possible (e.g., to issue news releases) within limits dictated by community policy. It follows, however, that the team must act responsibly in its acquired capacity as an official community representative (e.g., in the quality and tone of its news releases).
- Commercial support can be vital to an awareness program's success. There are many ways in which local commercial establishments can help a program. Donations of services and merchandise may be more readily obtained than donations of money. The following types of firms should be targeted for special attention: printers; paper distributors; utility companies; fast-food chains for active participation and support; and small commercial establishments for such purposes as poster display.

*Taken from the EPA report, Source Separation in Somerville and Marblehead, Massachusetts: The Community Awareness Program, section on Guidelines, pp. 65-75, (see Appendix for more detail).

Specific Program Components

Some of the components of a public awareness program are listed below. It is important that the components be selected to reinforce the message, but also be a part of an overall program strategy.

- Media
 - Program logotype and title
 - Newspapers
 - Community letter(s)
 - Radio and TV
 - Posters
 - Graphic displays
 - Stickers
 - Calendar
- Schools
- Community groups

BUSINESS ASPECTS

In many respects, starting a recycling program is like starting a small business. However, it is beyond the scope of this report to go into detail; only the briefest discussion of business aspects will be offered here. Other information on starting and managing a business is available.

- Management and administration approach - How will the program be structured? What is the relationship to public agencies? Should it incorporate?
- Necessary licenses to operate, such as small business license, use permits.
- Bookkeeping - Administering the materials sales, payroll, taxes, maintenance and operating costs, grants and in-kind revenues.
- Monitoring and data-gathering procedures for evaluation.
- Insurance - workmen's compensation, liability, vehicle collision.

EVALUATION

Routine evaluations of the program can serve several purposes. Weaknesses or undiscovered problems can be identified and solutions proposed. Changes in participation or volumes recycled can be monitored to inform the public

through the on-going public awareness program. Program results or successes are important to publicize in order to maintain public interest. Positive results may serve as justification for continuing the program or expanding in the future.

Monitoring and data gathering - Accurate records on the following quantifiable items may be useful in determining program success.

- Number of homes participating and frequency
- Refuse generation rate - lbs./mo./residence
- Total weight collected of each recyclable/month
- Revenues from sales of recyclables
- Program costs
- Person hours spent on particular tasks

Other non-quantifiable items may aid evaluation.

- Routes for collection
- Procedures and techniques used by workers

So far only data directly related to the program has been mentioned. To put the program economics in the context of solid waste management for the jurisdiction, other information, if available, could be collected.

- Costs for collection and disposal before the source separation program started.
- Quantities of wastes disposed of in landfills before and after the program started.
- Collection and disposal costs after implementation of separate collection.

Calculating program economics - Two different sets of calculations could aid program evaluation. First, based on costs and revenues of the program itself, a determination of whether the program is self-supporting can be made. The method for calculation is the same used for estimating revenue potential except that actual data is used (see pages 3-4). Second, the program economics can be compared with solid waste management costs before and after the initiation of the program.

Three steps toward making this evaluation are as follows:

1. Determine average quantities of residential refuse collected - tons/months

2. Determine average quantities of recyclables collected - tons/month
3. Calculate the disposal reduction (% by weight) - $\frac{\text{tons/mo. recyclables}}{\text{tons/mo. total refuse}}$
4. Determine collection and disposal cost prior to program - dollars/ton
5. Determine collection and disposal cost after program - dollars/ton
(This figure will take into account credit for diverted disposal costs and revenue from the sale of recyclables)
6. Calculate the change in disposal costs - (dollars/ton prior) - (dollars/tons after)
7. Calculate percent change - $\frac{\text{change in cost}}{\text{cost before program}}$

Figures 3 and 7 will give a sense of the extent to which the program is saving the jurisdiction money, if such is the case, showing a decrease in total amount of wastes to landfill and a decrease in the disposal costs per ton.

Feedback from persons or organizations participating in the program can help determine public acceptability or uncover problems. Some programs have arranged for a special phone line to answer questions and receive complaints.

Evaluation could result in constructive adjustments to program procedures that would ensure future success. Positive results, of course, give all participants a boost in morale and can be used to create more enthusiasm for the program.

CONCLUSION

Key elements of success, as discussed in this manual, and summarized by EPA, include:

- public education - to answer residents' questions and to provide persuasive reasons for participation in hopes of making recycling a habit
- materials and markets - to investigate markets and to obtain favorable long-term markets for recovered materials
- collection - to minimize collection costs through careful selection of appropriate equipment and personnel
- economics - to capitalize on the revenue possibilities and disposal cost savings that are unique to specific jurisdictions.

Good sources of advice to those who are considering a source separation program are:

- Those groups who are successfully operating programs, listed in Appendix K.
- The State Solid Waste Management Board staff, and the Board's various publications.
- EPA reports listed in the Bibliography. (Available from EPA. Copies may be examined at ABAG offices.)

As new projects are started in the Bay Area and elsewhere, and as new information becomes available, the State Solid Waste Management Board, with ABAG's assistance, hopes to update the material in this manual.

In workshops conducted throughout the Bay Area during preparation of ABAG's Environmental Management Plan for air and water quality and solid waste management, the region's citizens asked again and again what they could do, as individuals, to cut down on wasteful practices in our everyday lives. There is widespread agreement that source separation and recycling is a good way to accomplish this. This manual, by recording the experience of groups who have pioneered separate collection programs in Northern California and elsewhere in the United States, demonstrates that it can be done. While there are no sure-fire assurances that a source separation program will become a going operation, the history of certain communities shows clearly that with commitment and imagination, with careful planning and implementation, it can be done successfully.

As part of ABAG's commitment to carrying out the regional solid waste management plan, the staff will be available to help in the use of this manual, in obtaining local government endorsements, and in providing other information and assistance for your programs.

GOOD LUCK!

APPENDICES

APPENDIX A

Resource Recovery in the Bay Area

- 1) Descriptions of existing programs in Bay Area (including BACR, ENCORE)
- 2) Directory of recycling centers
- 3) Service station that accept used motor oil in San Francisco
- 4) Phone numbers to call for recycling information (from A.B.A. R.G.E., the Association of Bay Area Recycling Groups/Environmentalists)

BACR - BAY AREA CREATIVE RECYCLE - A CONSORTIUM

.What is BACR?

Now in the planning stage, the Bay Area Creative Recycle will be a regional consortium to make industrial waste available to educational community groups.

.What is the need?

Teachers, instructors, and community group leaders use large amounts of consumable materials in their work with children and adults of all ages. Materials are used in many settings including schools, parks, playgrounds, museums, and convalescent homes. As inflation increases, these groups face increasing budget shortages.

.Where does the surplus come from?

Industries in the Bay Area generate vast amounts of waste materials which are not presently being recycled. These waste by-products increase pollution and land fill, but they could be utilized for educational and community purposes if there were a coordinated system for collection and dispersal.

.What kinds of surplus are we talking about?

Many kinds...paper, cardboard, magazines, envelopes, books, boxes, wood scraps, picture frames, thread spools, rags, burlap, fabric roll ends, twine, canvas, rope, string, parachutes, rug scraps, leather scraps, plastic scraps, styrofoam, buttons, linoleum, rubber tubing, zippers, plastic bottles, glass jars, tile, beads, ceramic tiles, test tubes, telephone wire, etc., etc., etc., etc.!

.Who is attempting to meet the need?

Currently, groups in the Bay Area are collecting waste materials for creative uses, but in an independent and ineffective manner. Many other groups who have great need for such materials do not have access to it because the methods to make the waste products of industry available to educational and community groups are inadequate.

.Why is a coordinated effort needed?

Communication among the recycling groups has been inadequate. Without a central coordinating body, they cannot:

- .share sources of industrial waste materials;
- .share techniques for applying these materials creatively and ecologically;
- .set up a coordinated transportation, storage and dispersal system.

Due to a lack of coordination for both industry and community efforts, collection and distribution of materials are inadequate. The result is that most of industry's usable waste is lost for creative use.

What are the major problems that can be solved by coordination?

- .duplication of effort
- .inconvenience from disorganized handling
- .the need for waste materials to be moved out of needed space in industry as quickly as they accumulate
- .unawareness of industries that their waste is usable
- .unawareness of groups about much of the waste materials that industry generates

Most important, there is a lack of awareness among persons in education, the community, and industry as to the creative and ecological potential of waste materials. Education relating to the ecological and creative use of the waste materials would therefore be a beneficial part of the system.

What are the goals of BACR?

- .coordinate the identification, collection and dispersal of industrial waste materials;
- .help teachers, parents, and children develop conservation attitudes toward materials and the environment by teaching creative reuses of materials presently thought of as waste;
- .educate industries about uses of their waste materials and the advantages of redirecting their materials to educational and recreational programs;
- .aid industries in carrying out their own recycling efforts.

How was Bay Area Creative Recycle conceived?

In the fall of 1976, the staff of the Oakland Teachers' Active Learning Center invited representatives of Bay Area community groups and school districts to explore possibilities of developing a coordinated system to utilize waste materials more effectively. After several months of meeting together, the group decided to work toward creating a Bay Area system to identify appropriate surplus materials from industry, collect these materials and disseminate them in depositories located in the nine Bay Area counties. By January of 1977, the group had defined the concept, structure, and function of the system: Bay Area Creative Recycle (BACR).

.How would the consortium work?

.the Purpose

The consortium will act as a coordinating body (similar to ABAG) to support the development of a delivery system reclaiming waste materials for educational and recreational use.

.the Membership

The membership would be composed of representatives from industry, community, government, and education from the nine Bay Area counties (Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo and San Francisco). The membership consortium would be named Bay Area Creative Recycle (BACR).

.The structure

The consortium (BACR) would be made up of a Board of Directors (the total number to be determined later) from the appropriate county agencies. The Board would appoint a director and secretary who would have the responsibility of (1) organizing and maintaining liaison between the materials depots and their clients (school district, parks and recreation, etc.); (2) conducting or organizing inservice for the depot coordinators and staffs; and (3) maintaining contact with the appropriate Bay Area industrial, professional and agency associations and groups.

.The primary function

The chief function of BACR would be the support of Bay Area-wide staff who would implement a regional system for identifying, collecting and dispensing discarded and waste materials to educational and recreational groups (schools, parks, museums, senior citizens' groups, children's centers, cub scouts, brownies, etc.).

.The depots

When fully realized, the delivery system would be centered in five major depots located in the North, East, South and West Bay. Each depot would have a staff of:

- .one depot coordinator-solicitor
- .one warehouse person
- .two truck drivers
- .one secretary
- .numerous community volunteers

.The staff

The staff of each depot would have the responsibility within the region of:

- .identifying the available discarded and waste material in the depot's region;
- .maintaining constant contact with industry, manufacturers, small business, and the clients served by the depot;
- .collecting the material on a regular basis;
- .warehousing the material in the depot;
- .dispersing the materials to member groups;
- .keeping records of eligibility to receive materials.

.The services

In addition, the depot staff would maintain these services:

- .provide training services to client groups in the creative use of materials and in education of the community to develop conservation attitudes toward materials and the environment;
- .recruit community and educational groups to be the clientele for the system;
- .send newsletters to clients informing them of newly acquired materials and uses being made of these materials by participating groups;
- .consult with clients at the clients' sites to meet specific requests for scrap materials;
- .coordinate with other ecological groups to share those materials that are deemed inappropriate for use in educational or recreational settings;
- .communicate between member groups concerning their needs and uses of the scrap materials;
- .help prospective client groups set up facilities for storage and dispersal space for scrap materials.

For further information contact:

Oakland - Roberta Davis (415) 451-7741
San Francisco - Louise Nason (415) 771-4545
Hayward - William Baker (415) 881-6196
San Jose - Bud Horton (408) 998-6000
Santa Rosa - Marissa DeJoseph (707) 539-9953

For additional information on ENCORE!
please *specify what you wish to know* and
write to the office at:

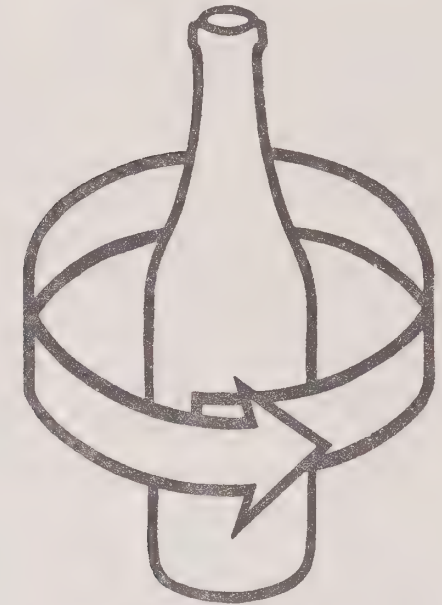
ENCORE!
Ecology Center
2179 Allston Way
Berkeley, California 94704

This is not the warehouse - please do not
bring your bottles here.

A-7

ENCORE!
Ecology Center
2179 Allston Way
Berkeley, CA 94704

**THAT WINE
BOTTLE YOU HAVE
YOU MAY HAVE
ENJOYED BEFORE**



ENCORE!

ENVIRONMENTAL CONTAINER REUSE PROGRAM

Non-Profit Org.
U.S. POSTAGE
PAID
PERMIT NO. 905
BERKELEY, CA. 94704

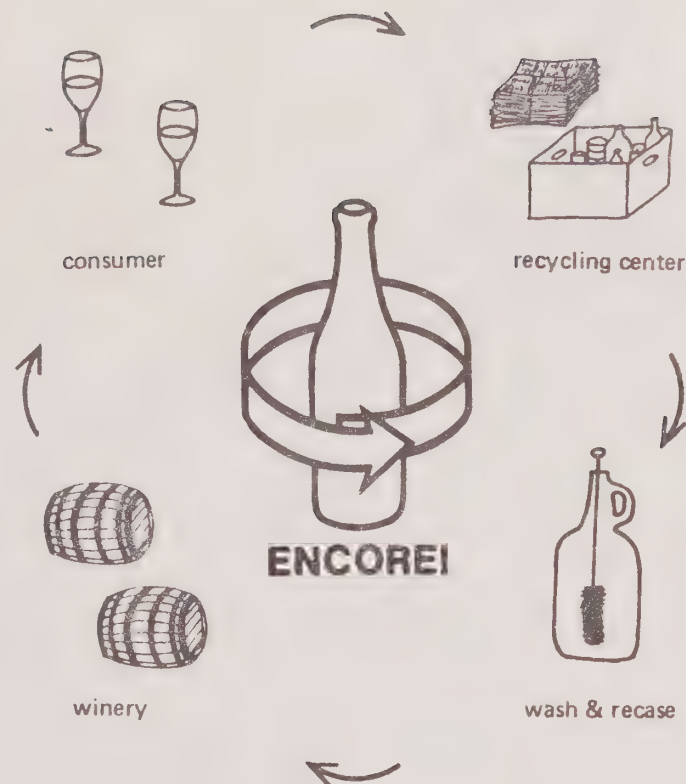


THE ENCORE! PROGRAM

California is blessed with a rich and bountiful grape harvest and Californians have celebrated this harvest by consuming 74 million gallons of wine annually. However, the bottling of this wine uses over 110 thousand tons of glass almost all of which is thrown away after only one use. Most of us now believe that resources and energy are becoming too precious to continue this kind of unnecessary waste.

ENCORE!, the Environmental Container Reuse Program, is one of many efforts aimed at attacking this problem. Begun with General Revenue Sharing funds provided by Alameda County in 1975, the ENCORE! program unites wineries, recycling centers, restaurants, stores and concerned groups and individuals in demonstrating that glass bottles can be washed and reused on a large scale.

The process is simple: used wine bottles are collected and returned to a central sorting warehouse in Berkeley. There, they are washed and sterilized in an hydraulic bottle washer custom designed for ENCORE! which incorporates special energy saving techniques. The "revitalized" bottles are then distributed to participating wineries



CLUBS AND ORGANIZATIONS

The easiest way to participate in ENCORE! is to take your empty wine bottles to the participating recycling center in your area. However, since ENCORE! will pay for these bottles, your group or organization can directly join the ENCORE! program and use it as a fund-raiser for worthwhile group projects.

If your organization is interested, *before you begin collecting*, please write for information, specifying "Organization" on the outside of the letter.

SOME ANSWERS TO YOUR QUESTIONS

Question. How much energy does ENCORE! save?

Answer. Reusing bottles uses less than half the energy required to produce new bottles.

Resources, such as potash, natural gas, and silica are saved too. Moreover, washed ENCORE! bottles are shipped in cartons made from recycled paper.

Question. Are ENCORE! bottles as safe as new bottles?

Answer. Wineries have been sterile-washing and reusing gallon and half-gallon bottles for decades. Brewers, soft drink bottlers, and dairies have often found that the process of being used can "weed out" the less satisfactory bottles. It's something like *survival of the fittest* — only the best are used again.

Question. Can I get paid for empty wine bottles?

Answer. Yes! But only by *previous arrangement* or by bringing them to the ENCORE! warehouse in Berkeley. Since you will need to know details concerning types, packing, payment, delivery, pick-up, warehouse receiving hours, etc., please write ENCORE! for an information fact sheet.

Question. Is there any limit to the number of empty wine bottles one person or club may return?

Answer. None whatsoever, but ENCORE! is only accepting certain types and sizes of wine bottles at this time. Again, write for details.

Question. Other containers such as jars are also reusable. Is ENCORE! accepting these too?

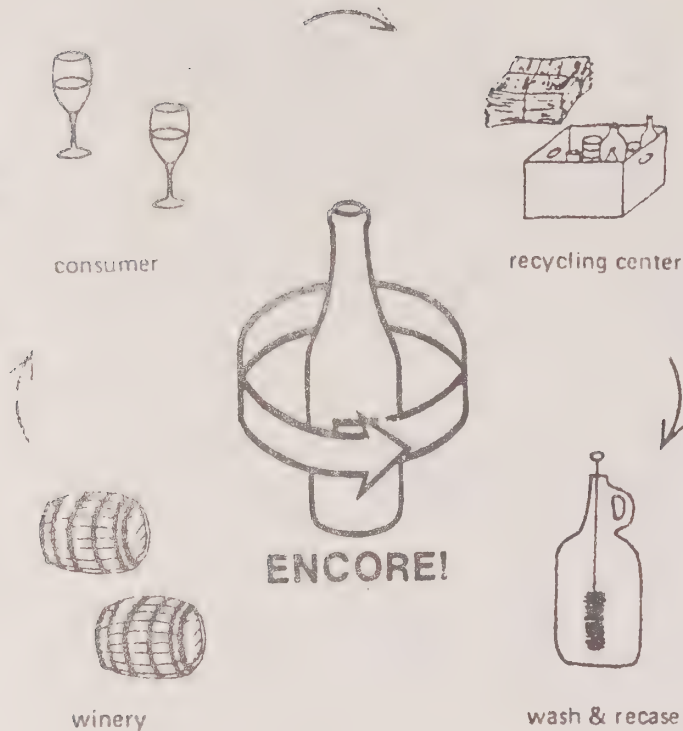
Answer. Not at this time. The program will be experimenting with washing other types of containers and may accept them in the future.

Question. I make my own wine. Can ENCORE! wash and sterilize my bottles?

Answer. Yes, if you bring them to the ENCORE! warehouse. Minimum quantities are required, however, so please write for details specifying "Home Wine-Maker" on the outside of your letter.

Question. Does wine taste better in an ENCORE! bottle?

Answer. *De gustibus non disputandum est.* . . . but, many Californians think it *feels* better!



For the location of the nearest place to take your bottles call your local recycling center or contact ENCORE! at 415-849-2525.

ENCORE! WAREHOUSE
5951 Doyle Street
Emeryville, Calif.
M-F 9-4

THE ENCORE! PROGRAM

For over half a decade Northern Californians have actively participated in programs aimed at reducing resource and energy use. For many of us, newspaper drives, can and litter collections, going to recycling centers, and numerous other activities have become commonplace.

In March 1975, Alameda County general revenue sharing funds were provided for a new program -- ENCORE! -- the Environmental Container Reuse program. Recognizing that the 74 million gallons of wine consumed annually in California requires over 110 thousand tons of glass "throwaway" bottles, ENCORE! unites wineries, recycling centers, restaurants, stores and concerned groups and individuals in demonstrating that empty wine bottles can be collected, washed, and reused on a large scale.

The process is simple: Used wine bottles are collected and returned to a central sorting warehouse in Berkeley. There, they are washed and sterilized in an hydraulic bottle washer custom designed for ENCORE! and incorporating special energy saving techniques. The "revitalized" bottles are then distributed to participating wineries.

The process is safe: Dairies, soft drink bottlers, brewers, and even the smaller wineries have been sterile washing and reusing bottles for over a century (In fact, today's throwaway glass container only came into existence in the late 1950's.). ENCORE! maintains the strictest quality control standards and meets all State, local and federal health regulations.

The process saves: Reused bottles can require less than 60% of the energy needed to make new bottles, and that's new bottles made from either raw resources or recycled glass cullet.

Interested in participating in ENCORE! Then turn over the page!!!

We are now collecting and separating certain types of wine bottles for a program which will wash the bottles and redistribute them to be refilled by participating Northern California wineries.

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

ALL BOTTLES

DOMESTIC ONLY -- Recognize U.S. made bottles by the label or ask an ENCORE! representative.

FIFTHS
(4/5 Quart)
&
(750 ml)

- ALL --
- 1) Cork type only(no screw cap closures)
 - 2) Green and Clear only(no brown)
 - 3) No dessert wine bottles(ie sherry etc.)
 - 4) No champagne bottles
 - 5) Leave labels on if you want
 - 6) No bottles with "push-up" indentation on the bottom
 - 7) Remove foil or plastic from the neck

Please Separate These Three Types --



Burgundy
--Smooth shoulders
--Gentle taper



Claret(Sauterne)
--High shoulders
--Shorter neck



Hock(Riesling)
--Taller
--Smooth taper
--Long neck

HALF GALLONS



- 1) Screw cap closures only
- 2) Straight sides(No "fancy" bottles)
- 3) With or without handle
- 4) Green and clear only
- 5) Remove caps and neck rings

GALLONS



- 1) Screw cap closures only(no cork or flip top)
- 2) Clear & some green-ask for details
- 3) Straight sides only
- 4) Remove neck rings and caps

WINE BOTTLE CARTONS

For easier storing of bottles in your home, pick up a carton (with dividers if possible) from a liquor store, supermarket, or restaurant near you. Then bring the carton with you. This helps our handling too, and reduces the need for new boxes.

THANK YOU !!!

See top of other side for where you can deliver bottles.

WHERE TO GO FOR RECYCLING

RECYCLING CENTERS

ALAMEDA COUNTY

Information

The Ecology Center, 2179 Allston Way, Berkeley, 548-2220. Open weekdays, 10 a.m. - 6 p.m.; Saturdays, 11 a.m. - 5 p.m.

Alameda

Naval Reserve Center. Glass, metals, newspapers, cardboard. Saturdays, 10 a.m. - 4 p.m.

Albany

Albany Village Recycling Center, Albany Village and 9th Street. Glass, cars, newspapers, paper bags, cardboard. Saturdays, 9 a.m. - 1 p.m.

Monthly curbside pickup of newspapers by the Berkeley Ecology Center. Phone 548-2220.

Berkeley

Berkeley Recycling Collective, Sacramento and University, 845-0431. Glass, metals newspapers. Saturdays, Sundays, 10 a.m. - 5 p.m.

Encore! Parker between 8th and 9th, 849-2525. Wine bottles which are recycled back into wine bottles. Monday-Friday, 9 a.m. - 4 p.m.

Flatlands Recycling Center, Grove and Dwight Way, 845-0431. Glass, metals, newspapers. Tuesdays, Wednesdays, 10 a.m.-5p.m.

Monthly curbside pickup of newspapers by the Berkeley Ecology Center. Phone 548-2220.

Castro Valley

Castro Valley Co-op Market, 3667 Castro Valley Blvd., 357-8888, 582-9614 or 538-4819. Glass, metals, newspapers. Saturdays, 10 a.m. - 4:30 p.m.; Sundays 12 p.m. - 4:30 p.m.

Hayward

Eden Valley YMCA, 24718 Mission Blvd., 582-9614. Glass, metals, newspapers. Always open.

RECYCLING CENTERS (continued) Page 2

Livermore

Valley Recycling Center, behind barn on Pacific. Glass, metals, newspapers, Saturdays, 10 a.m. - 4 p.m.

Oakland

Merritt College Recycling Center, 12500 Campus Drive, Parking Lot B. Tel: 531-4911. Glass, metals, newspapers. Wednesdays - Sundays, 9 a.m. - 4 p.m.

Telegraph Community Center, 5316 Telegraph Ave. Tel: 658-4457. Glass, metals, newspapers, cardboard, paper bags. Always open

Zero Waste Systems. 2928 Poplar Street. Tel: 893-8257. Industrial wastes.

Piedmont

Piedmont Recycling Center, 800 Magnolia Street Tel: 653-6522. Glass, metals, newspapers, cardboard, paper bags. Sundays, 10 a.m. - 3 p.m.

San Leandro

San Leandro Ecology Center, 1190 Davis Street. Tel: 635-8200. Glass, metals, newspapers. Mondays, Tuesdays, Thursdays, Fridays. 10 a.m. - 4 p.m. Saturdays 9 a.m. - 5 p.m.

CONTRA COSTA COUNTY

Antioch/Pittsburg

Near Neditch Wood Products, Pittsburg/Antioch Hwy. Tel. 754-5915. Glass, metals, newspapers. Mondays - Fridays, 8:30 a.m. - 4 p.m.

Dublin

Dublin Blvd. between Valley High School and Foremost Corporation. Tel: 846-2583. Glass, metals, newspapers. Saturdays 10 a.m. - 4 p.m.

El Cerrito

E.C.ology, City of El Cerrito Corporation Yard, east end of Schmidt Lane. Tel: 234-7745 or 232-9606. Glass, metals, newspapers cardboard, paper bags. First and third Saturdays, 9 a.m. - 1 p.m.

RECYCLING CENTER (continued) Page 3

Fremont

Tri-City Recycling Center, Meadow Square Shopping Center. 41200 Blacow Road. Tel: 793-6222. Glass, metals, newspapers. Saturdays, Sundays, 10 a.m. - 4 p.m.

Moraga

Earth - the Ecology Movement, Campolindo High School, 300 Moraga Road. Tel: 376-5986. Aluminum, glass, newspapers. Always open.

Pleasant Hill

Pleasant Hill High School, 3100 Oak Park Blvd. Tel: 934-6746. Glass, metals, newspapers. Always open except during school hours.

Richmond

People Pledged for Community Progress, 310 Bissell. Tel: 841-2327. Glass, cans, newspapers, cardboard, paper bags. Saturdays, 10 a.m. - 3 p.m.

MARIN COUNTY

Bolinas

Bolinas Community Center. Tel: 868-9960. Cans (no bimetal), newspapers, cardboard, mixed paper. Third Saturdays.

Greenbrae

Marin Environmental Co-op, 45 East Sir Francis Drake Blvd. (across from the Ferry Building). Tel: 456-4980. Steel and aluminum cans, newspapers, cardboard, mixed paper. Sundays, 10 a.m. - 4 p.m.

Mill Valley

Marin Environmental Co-op, behind the Mill Valley sewage plant off Sycamore St. Tel: 456-4980. Steel and aluminum cans, newspapers, cardboard, mixed waste paper. Saturdays, Sundays, 10 a.m. - 4 p.m.

RECYCLING CENTERS (continued) Page 4

Novato

Marin Environmental Co-op, Novato City Hall parking lot off Martin St. Tel. 456-4980. Steel and aluminum cans, newspapers, cardboard mixed waste paper. Sundays, 10 a.m. - 4 p.m.

San Anselmo

Marin Environmental Co-op, Sir Francis Drake High School, Sir Francis Drake Blvd., Tel. 456-4980. Steel and aluminum cans, newspapers. cardboard, mixed waste papers. Sundays, 10 a.m. - 4 p.m.

San Rafael

Marin Environmental Co-op, 501 Irwin St. Tel. 456-4980. Steel and aluminum cans, newspapers, cardboard, mixed waste paper, ledger paper, computer print-outs and cards scrap metal (all types). Monday-Friday, 8:30 a.m. - 4 p.m.

Tiburon, Belvedere, Strawberry

Marin Environmental Co-op, Paradise Drive and Mar West Blvd., Tiburon. Tel. 456-4980. Glass (clear or green only), steel and aluminum cans, newspaper, cardboard, mixed waste paper. Saturdays, Sundays, 10 a.m - 2 p.m.

Peninsula Recycling Home Pickup Service. Glass, steel and aluminum cans, newspapers, cardboard, mixed paper. Tel. 456-4980.

SAN FRANCISCO COUNTY

Information

Richmond Environment Action, 779 Thirty-Eight Avenue. Tel. 387-3044.

Haight-Inner Sunset

Haight-Ashbury Neighborhood Council, Kezar Stadium parking lot, Stanyan and Waller. Tin, glass, aluminum, newspapers. Second and fourth Saturdays, 10 a.m. - 2 p.m.

Marina

AM-FM Recycling, Laguna and Marina opposite the Marina Safeway. Tin, glass, aluminum, newspapers. Second and fourth Saturday 10 a.m. - 1 p.m.

Mission

Mission High School, 18th and Church Streets. Tin, glass, aluminum, newspapers. Second Saturday, 8:30 a.m. - 11:30 a.m.

RECYCLING CENTERS (continued) Page 5

Outer Mission

St. Peter's Church, 24th and Alabama Streets. Tin, glass, aluminum, newspapers. Saturdays 10 a.m. - 4 p.m.

Outer Richmond

Richmond Environment Action, George Washington High School, 30th Avenue near Geary. Tin, glass, aluminum, newspapers. Second and fourth Saturday. 9 a.m. - 2 p.m.

Outer Sunset

Giannini Junior High School, Ortega St. and Sunset Blvd. Tin, glass, aluminum. Third Saturday 9 a.m. - 2 p.m.

Richmond

Richmond Environment Action, Turk and Parker Streets. Glass, metals, newspapers, cardboard, wine bottles. First and third Saturdays, 9 a.m. - 2 p.m.

Stonestown-Ingleside-Sunset

Lowell High School, 25th Street and Eucalyptus Drive. Tin, glass, aluminum, newspapers. Third Saturdays, 8:30 a.m. - 12 p.m.

Upper Market

UC Extension, Buchanan and Waller Streets. Tin, glass, aluminum, newspapers. Second Saturday, 10 a.m. - 2 p.m.

West of Twin Peaks

McAteer High School, Portola and O'Shaughnessey Blvd. Tin, glass, aluminum, newspaper. Second Saturday, 9 a.m. - 12 p.m.

Western Addition

Western Addition YMCA, 1830 Sutter Street (at Buchanan). Tin, glass, aluminum, newspaper. Second Saturday, 9 a.m. - 12 p.m.

SAN MATEO COUNTY

Information

Peninsula Conservation Center, 1176 Emerson Street, Palo Alto. Tel: 328-5313. Open Monday-Friday, 9 a.m. - 5 p.m.

RECYCLING CENTERS (continued) Page 6

Environmental Information Center, San Jose State University. 125 South Seventh Street, San Jose. Tel: (408) 277-2852.

Belmont

Cub Scouts, end of Sem Lane. Tel: 592-1745. Aluminum cans. Monday-Sunday, 9 a.m. - 12 p.m.

Menlo Park

Peninsula Recycling Operation, Stanford Research Institute parking lot, Ringwood and Middlefield Road. Tel: 328-5535. Glass, cans (no bimetal), newspapers, computer cards and printouts, file folders, cardboard. Always open.

Pacifica

Ecology Action of Pacifica, Highway 1, Linda Mar, Tel: 359-5353. Newspapers, cardboard, paper bags, aluminum and steel cans (no bimetal), glass. Tuesdays and Saturdays, 10 a.m. - 12 p.m.

Redwood City

Canada College, 4200 Farm Hill Blvd. Tel: 364-1212, extension 276. Glass, cans, newspapers. Weekdays, 9 a.m. - 4 p.m.

San Bruno

FHAR (Family Homes for Adult Retarded), Federal Archives parking lot, 1000 Commodore Drive. Tel: 593-2516 (Belmont). Newspapers, cardboard, brown bags, glass, aluminum, tin, bimetal. Always open.

San Bruno Garbage Company, tel. 583-8536. Home pick-up of newspapers put out with refuse.

San Mateo

Benesford Recreation Center, Alameda de las Pulgas and 28th Avenue. Tel: 574-6745. Always open.

SANTA CLARA COUNTY

Information

Peninsula Conservation Center, 1176 Emerson Street, Palo Alto. Tel: 328-5313. Open Monday-Friday, 9 a.m. - 5 p.m.

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RECYCLING CENTERS (continued) Page 7

Environmental Information Center, San Jose State University, 125 So. Seventh Street, San Jose. Tel. (408) 277-2852.

Campbell

Campbell Community Recycling Center, Campbell High School, Campbell Avenue. Tel. 379-4710. Glass, metals, newspapers. Open alternate Saturdays, 10 a.m. - 4 p.m.

Cupertino

Cupertino Community Recycling Center, De Anza College on McClellan. Glass, metals, newspapers. Fridays, Saturdays, Sundays, Mondays. 10 a.m. - 4 p.m.

Los Altos

People Who Care Recycling Center, West Edith near Main and San Antonio. Glass, metals, newspapers, clothing. Wednesdays, 10 a.m. - 6 p.m.; Saturdays and Sundays, 9 a.m. - 4 p.m.

Los Gatos

Los Gatos Recycling Center, end of Miles Avenue. Glass, metals, newspapers. Saturdays, Sundays, 10 a.m. - 2 p.m.

Milpitas

Milpitas Recycling Center, 1585 Roger (corporation yard of the Milpitas Unified School District). Glass, metals, newspapers, Saturdays, Sundays, 10 a.m. - 4 p.m.

Mountain View

Mountain View Recycling Center, 935 Terra Bella Avenue. Glass, metals, newspapers. Weekdays, 8 a.m. - 5 p.m.

Palo Alto

City of Palo Alto, City Disposal Area, 2380 Embarcadero. Tel. 324-4894. Glass, cans, newspapers, cardboard. Wednesdays through Sundays, 9 a.m. - 5 p.m.

Community Association for the Retarded, 3804 Middlefield Road. Tel. 494-0550. Newspapers. Always open.

Grace Lutheran Church. Loma Verde and Waverly Streets. Tel. 494-1212. Newspapers. First Saturday and Sunday of each month.

Old Barrel, 4075 El Camino Way. Tel. 493-2851. Aluminum cans. Monday through Sunday, 9 a.m. - 12 p.m.

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RECYCLING CENTERS (continued) Page 8

Palo Alto Recycling Center, 1990 Embarcadero. Glass, metals, newspapers, cardboard. Wednesdays-Sundays, 8 a.m. -5 p.m.

Peninsula Recycling Operation. Stanford University. Pampas Lane just beyond the Credit Union. Tel. 328-5535. Glass, cans, (no bimetal), newspapers, computer cards and printouts, file folders, cardboard. Always open.

San Jose

Boy Scouts of America, Troop 334, 3155 Union Avenue (Trinity Church). Glass, aluminum. Always open.

Branham High School Recycling Center, 1570 Branham Lane. Tel. 265-8440. Glass, metals, newspapers. Open alternate Saturdays 10 a.m. - 3 p.m.

East Side Recycling Center, Linda Vista Community School, Gordon Avenue near Kirk. Glass, tin, bimetal, aluminum. Saturdays 9 a.m. - 4 p.m.

Holy Spirit Church, 1200 Redmond Road. Glass, metals. First and third Saturdays, 10 a.m. - 2 p.m.

Lincoln High School Recycling Center, 555 Dana Avenue. Glass, metals, newspapers. First and third Saturdays, 9 a.m. - 4 p.m.

Minnesota Avenue Scout Recycling Center, 1165 Minnesota Avenue. Glass, metals, Open two Saturdays each month.

San Jose City College Recycling Center, corner of Leigh and Kingman Avenues. Sometimes open Monday - Friday afternoons.

San Jose Recycling, Singleton Road across from the city dump. Glass, metals, newspapers, clothing, motor oil. Saturdays, Sundays, 9 a.m. - 4 p.m.

Spartan Gardens, San Jose State University, Humboldt and Seventh. Tel. 277-2189. Glass, metals, newspapers. Saturdays, 10 a.m. - 4 p.m.

Santa Clara

NorCal P.R.G. Recycling Center, Franklin Street between the railroad tracks. Glass, tin, bimetal, aluminum, newspapers. Always open.

Saratoga

Saratoga Recycling Center, end of Allendale Avenue. Glass, metals, newspapers, cardboard, motor oil. Wednesdays, 1-5 p.m.; Saturdays, 9 a.m. - 2 p.m.; Sundays 9 a.m. - 2 p.m.

Prospect High School Recycling Center, 18900 Prospect Road. Glass, metals. Wednesdays after 2:30 p.m.; Thursday before 2:30 p.m.

RECYCLING CENTERS (continued) Page 9

Sunnyvale

Fremont High Recycling Center, Sunnyvale-Saratoga Road and Fremont (near tennis courts). Glass, metals, newspapers. Saturdays, 9:30 a.m. - 3:30 p.m.

Sunnyvale Recycling Center, Caribbean and Barregas Avenues. Glass, metals, newspapers, motor oil. Mondays and Thursdays, 12-5 p.m.; Fridays, 11 a.m. - 5 p.m.; Saturdays and Sundays 9 a.m. - 5 p.m.

SONOMA COUNTY

Information

Santa Rosa Recycling Center, 101 Mission Blvd., Santa Rosa. Tel: (707) 539-8384 or 539-9953. Open Mondays-Saturdays, 10 a.m. - 4 p.m.

Cotati

Santa Rosa Recycling Center, Rancho Cotati Center. Tel: 539-9953. Glass, cans, newspapers, paper bags, cardboard, motor oil, scrap metal, cooking grease. Second and fourth Saturdays, 11 a.m. - 4 p.m.

Forestville

Santa Rosa Recycling Center, Forestville School. Tel: 539-9953. Glass, cans, newspapers, paper bags, cardboard, motor oil, scrap metal, cooking grease. First Saturdays of the month, 11 a.m. - 3 p.m.

Healdsburg

Sonoma County Recycling, 208 Hayden. Tel: 433-1240. Glass, cans, newspapers, cardboard, scrap metal. Tuesdays-Saturdays, 9:30 a.m. - 4 p.m.

Monte Rio

Sonoma County Recycling, Monte Rio Co-op. Tel: 433-1240. Glass, cans, newspapers. Open during the store hours.

Oakmont

Oakmont Furniture Store. Tel: 539-9953. Glass, cans, newspapers, bags, cardboard, motor oil, scrap metals, cooking grease. First and third Wednesday, 10 a.m. - 3 p.m.

RECYCLING CENTERS (continued) Page 10

Rohnert Park

Petaluma Recycling Center, 3504 Bodega Avenue. Tel. 763-4761. Glass, cans, newspapers, cardboard, book. Weekdays, 9:30 a.m. - 3 p.m. Saturdays, 10 a.m. - 4 p.m.

Santa Rosa

Santa Rosa Recycling Center, Mission Blvd. and Highway 12. Tel. 539-9953. Glass, cans, newspapers, paper bags, cardboard, motor oil, scrap metal, cooking grease. Monday through Saturdays 10 a.m. - 4 p.m.

Santa Rosa Recycling Center, Coddington Center. Tel. 539-9953. Glass, cans, newspapers, paper bags, cardboard, motor oil, scrap metal, cooking grease. Saturdays, 10 a.m. - 4 p.m.

Sebastapol

Santa Rosa Recycling Center, Analy High School. Glass, cans, newspapers, paper bags, cardboard, motor oil, scrap metal, cooking grease. Second Saturday of the month, 11 a.m. - 3 p.m.

A-20

RECLAMATION CENTERS

ALAMEDA COUNTY

Berkeley

I & B Enterprises, Inc., 890 Heinz Avenue. Tel: 549-254^b. Paper. Weekdays, 7 a.m. - 3:30 p.m. Saturdays, 9 a.m. - 10:30 a.m.

Recovery Recycling, 2001 Allston Way. Tel: 841-2327. Paper. Weekdays 9 a.m. - 3 p.m.

Emeryville

Judson Steel Corporation, 4200 Eastshore Highway. Tel: 652-3530. Ferrous Metals. Daily, 7 a.m. - 3 p.m.

Hayward

Coors Distributing Company, 31650 Hayman Street. Tel: 471-4322. Aluminum, glass. Fridays, 12 a.m. - 4:30 p.m. (aluminum), Mondays-Thursdays, 9 a.m. - 12 p.m. (glass).

East Bay Excavating Company, Inc., 28814 Mission Blvd. Tel: 538-5080. Glass. Weekdays, 7:30 a.m. - 3:45 p.m. Please call first.

Glass Container Corporation, 22340 Hathaway Avenue. Tel: 581-5025. Glass. Tuesdays and Thursdays, 9 a.m. - 12 p.m.

Reynolds Aluminum Recycling Plant, 20671 Corsair Blvd. Tel: 785-9565. Aluminum. Mondays-Saturdays, 9 a.m. - 4:30 p.m.

Oakland

American Can Company, 3801 East 8th Street. Tel: 536-2400. Aluminum, ferrous metals. Bins available at all hours.

Associated Metals, 2730 Peralta. Tel: 832-4343. Aluminum. Weekdays, 8 a.m. - 4:30 p.m.

Brockway Glass Company, 8717 "G" Street. Tel: 632-7250. Glass. Mondays, Wednesdays, Fridays, 1-4 p.m.

Camco, 6805 San Leandro Street. Tel: 562-5250. Wood. Call first.

Coors Distributing Company, 1233 Twenty-first Street. Tel: 465-2830. Aluminum. Mondays, Wednesdays, 3-5 p.m.; Thursdays, Fridays, 11 a.m. - 4 p.m.

Independent Paper Stock, 330 Wood Street. Tel: 654-3787. Paper. Weekdays, 7 a.m. - 4 p.m.; Saturdays, 8 a.m. - 2 p.m.

RECLAMATION CENTERS (continued) Page 2

Markstein Beverage Company, 55 Fourth Street. Tel: 893-9753. Aluminum. Tuesday-Thursday, 11 a.m. - 1 p.m.

Owens-Illinois, Glass Container Division, 5800 Coliseum Way. Glass. Fridays, 12 - 4 p.m.; Saturdays, 8 a.m. - 4 p.m.

Reynolds Aluminum Recycling Plant, 950 Fifty-seventh Street. Tel: 547-6899. Aluminum. Tuesdays-Saturdays, 9 a.m. - 4:30 p.m.

Sassoon-Scherman Fibers Company, 1800 Peralta Street. Tel: 465-9700. Paper. Weekdays, 7 a.m. - 3:30 p.m., Saturdays, 8 a.m. - 12 p.m.

San Leandro

Anchor Hocking Corporation, 1940 Fairway Drive. Tel: 357-6060. Glass. Tuesdays, Thursdays, Saturdays, 9 a.m. - 1 p.m.

Continental Can Company, 1951 Fairway Drive. Tel: 357-0630. Ferrous metals. Weekdays, 8 a.m. - 4 p.m.

Kaiser Gypsum, 1988 Marina Blvd. Tel: 483-7580. Paper. Bins available at all hours.

San Leandro Bay City Paper, 2615 Davis Street. Tel: 832-7843. Papers. Weekdays, 7:30 a.m. - 4 p.m.

Union City

Kaiser Aluminum & Chemical Corporation (Can Do) 33280 Central Avenue. Tel: 471-2133. Aluminum. Saturdays, Sundays 9 a.m. - 4 p.m.

Markstein Beverage Company, 2900 Volpey Way. Tel: 471-4222. Aluminum. Tuesdays, Thursday, 10 a.m. - 1 p.m.

CONTRA COSTA COUNTY

Concord

Contra Costa Waste Service, 1340 Concord Avenue. Tel: 682-9073. Paper. Weekdays, 9 a.m. - 3 p.m.; Saturdays 9 a.m. - 1 p.m.

Coors Distributing Company, 2151 Market Street. Tel: 685-7083. Aluminum, glass. Saturday, 11 a.m. - 4 p.m.

Mount Diablo Paper Stock, 1340 Concord Avenue. Tel: 682-4518. Paper. Weekdays, 9 a.m. - 3 p.m., Saturdays, 9 a.m. - 1 p.m.

RECLAMATION CENTERS (continued) Page 3

Pittsburg

Coors Distributing Company, 705 Bias Avenue. Tel: 439-5151. Aluminum. Mondays, 10 a.m. - 2 p.m.

Markstein Beverage Company, 2101 Martin Way. Tel: 431-0161/ Aluminum. Tuesday-Thursday, 11 a.m. - 1 p.m.

Richmond

Certain-Teed Products Corporation, 1014 Chesley Avenue. Tel: 232-7980. Paper. Weekdays, 8 a.m. - 3:30 p.m. Call a day ahead.

Consolidated Fibers, 5327 Jacuzzi. Tel: 527-8500. Weekdays, 8 a.m. - 4 p.m.

Lloyd B. Henry, Inc. 2700 Ryalin Road. Tel: 235-0300. Aluminum. Weekdays, 12 a.m. - 1 p.m.

Sonoco Products, First and Gerrard Streets. Tel: 233-4922. Paper. Daily, 7 a.m. - 3:45 p.m. Please bundle.

MARIN COUNTY

Novato

Golden Gate Distributing Company, 12 Harbor Drive at Blackpoint. Tel: 453-4184 or 897-6101. Aluminum cans only. Mondays-Thursdays, 10 a.m. - 2 p.m.

San Rafael

DeMaestri Distributing Company, 100 Lisbon Street. Tel: 453-9304. Aluminum cans only. Tuesday, 10 a.m. - 12 p.m.

Trombetta Beverages, 10 Hamilton Drive. Tel: 456-6854. Aluminum. Weekdays, 1:30 - 3:30 p.m.

NAPA COUNTY

Clark Miller Distributing Company, 3210 California Blvd. Tel: (707) 226-9335. Aluminum. Tuesdays, Thursdays, 9-11 a.m.

St. Helena

Upper Valley Disposal, P.O. Box 382. Tel: (707) 963-7988. Glass. Tuesdays-Saturdays, 9 a.m. - 5 p.m. Sundays, 9 a.m. - 3 p.m.

RECLAMATION CENTERS (continued) Page 4

SAN FRANCISCO COUNTY

Bacco Distributing Company, 175 Townsend Street. Tel: 957-9900. Aluminum. Tuesdays and Thursdays, 11 a.m. - 2 p.m.

Brookside-Mills Winery, 2725 Geary Street . Tel: 929-9726. Glass. (Brookside glass only). Daily, 10 a.m. - 7 p.m.

Coors Distributing Company, 2550 Army Street. Tel: 826-1660. Aluminum, glass. Mondays, Wednesdays, 10 a.m.-2 p.m.

Golden Brand Bottling Company. 255 Channel Street. Tel: 863-4669. Aluminum, glass. Mondays, 10 a.m. - 12 p.m.

Independent Paper Stock, 350 Rhode Island Street. Tel: 621-6200. Paper. Weekdays, 7 a.m. - 4 p.m. Saturdays, 8 a.m. - 1:30pm

SAN MATEO COUNTY

Brisbane

Reynolds Aluminum, 401 Tunnel Avenue. Tel: 467-9798. Aluminum. Tuesdays-Saturdays, 9 a.m. - 4:30 p.m.

Redwood City

Coors West, Inc. 890 Broadway. Tel: 368-2825. Aluminum, glass. Tuesdays, Thursdays, 9 a.m. - 12 p.m. (Summers, add Fridays, 9 a.m. - 12 p.m.)

South San Francisco

Kaiser Aluminum & Chemical Corporation (Can Do), 177 South Airport Blvd. Tel: 761-0511. Aluminum. Saturdays 9 a.m. - 1 p.m.

M & T Chemicals, Inc. 270 Grand Avenue. Ferrous metals. Weekdays, 8:15 a.m. - 4:15 p.m.

SANTA CLARA COUNTY

Mountain View

Independent Paper Stock, 194 Evelyn Avenue. Tel: 968-0129. Paper. Weekdays, 7 a.m. - 3:30 p.m.

Oil recycled here

You can help STOP the world's BIGGEST OIL LEAK — 500 million gallons wasted a year!

This is how you can STOP the BIGGEST OIL LEAK:

- 1) Obtain any empty, clean, and dry plastic or gallon container (or larger) such as a water, bleach, or anti-freeze container.
- 2) Container should NOT have any water, bleach, or anti-freeze in it. Any container with residue other than oil will not be accepted.
- 3) Put used crankcase oil into plastic gallon container with cap — please cap tightly.
- 4) Your container will be returned to you. The used oil will only be accepted during service station business hours.

The following neighborhood service stations have agreed to participate in this vital oil saving program:

ARCO
1301 Lincoln Way
(Lincoln Way & 14th Ave.)
Victor Tom, Manager

EMERALD ARCO
645 Judah St.
(Judah/11th Ave.)
Seamus Gaffney, Manager

SUNSET CHEVRON
2940 Sloat Blvd.
(Sloat Blvd./Grt. Hwy.)
Winston Hom, Manager

7th Ave. LINCOLN CHEVRON
1200 7th Ave.
(Lincoln Way/7th Ave.)
Tel. 664-9907

BILL HOLMES SHELL
2600 Sloat Blvd.
(Sloat Blvd./44th Ave.)
Bill Holmes, Owner/Mgr.

TEXACO
Geary Blvd. & Stanyan St.
Larry Nasey
Manager

FOREST HILL UNION 76
300 Laguna Honda Blvd.
(Laguna Honda/Plaza)
Len Plato, Manager

ARCO
388 - 32nd Avenue
(32nd Ave./Clement St.)
Frank Wong, Manager

SUNSET ARCO
2230 Judah St.
(27th Ave./Judah)
Nick Markof, Manager

VERN BOX CHEVRON
399 West Portal
(West Portal/15th Ave.)
Cliff Box, Manager

MOBIL
2500 Fulton Ave.
(Fulton Ave./Arguello)
Reginald Chan, Manager

STANDARD
Noriega & 30th Ave.
Eugene Lew
Manager

UNION 76
300 West Portal Ave.
(West Portal/14th Ave.)
Charles L. Fenech, Mgr.

UNION 76
1200 La Playa
(La Playa/ Lincoln Way)
John Conlon, Manager

UNION 76
Noriega Ave. & 24th Ave.
Tony Fajardin, Manager

Phone numbers to call for recycling information:

San Francisco	387-3044
Marin	456-4980
East Bay	548-2220
Peninsula	328-5313
San Jose	277-4681

APPENDIX B

Examples of Existing Source Separation Programs

- 1) Santa Rosa, California
- 2) El Cerrito, California
- 3) Livermore, California
- 4) San Luis Obispo, California
- 5) Somerville, Massachusetts
- 6) Marblehead, Massachusetts

Santa Rosa, California

Recycle 3

Type of Program: Curbside residential recycling program

Size of Community: 69,400

Products: Newspaper, metal, glass

Start-up Date: January 9, 1978

Project Contact: Alan Milner
Recycle 3
P.O. Box 633
Santa Rosa, CA 95402
(707) 545-7427

Santa Rosa is located in the metropolitan San Francisco Bay Area about 50 miles north of the Golden Gate. The current population is just under 70,000 and the city covers 25½ square miles.

Originally Santa Rosa's program offered pick-up of materials to single family homes and mobile home parks. After several months 1600 homes in five separate neighborhoods received special standardized colored containers to separate the recyclables. Participation by residence on the average doubled after containers were issues; in one neighborhood it increased by ten-fold.

Materials are separated into newspaper, metal (ferrous and non-ferrous), and glass; the containers are placed at the curb on the normal garbage day for pick-up. Three low-bed trucks, each having 3 bins for recyclables and operated by 2 person crews, collect the separated materials. Fork-lifts take the bins off the trucks and transfer them to larger containers for transport to markets.

The program is run cooperatively by the City of Santa Rosa and the Redwood Empire Disposal Corp. Funding assistance has been received through CETA and from the State Solid Waste Management Board. A public education and awareness program was developed using a public relations consultant and the Sonoma Arts Council, a non-profit organization.

El Cerrito, California

E.C.ology Center

Type of Program: Residential curbside collection and recycling program
Size of Community: 23,950
Products: glass, metal, newspaper
Start-up Date: August 1977 (for curbside collection phase)
Project Contact: Joel Witherell
E.C. ology Recycling Center
10890 San Pablo Avenue
El Cerrito, California 94530
(415) 238-7445

El Cerrito is an urban community in the San Francisco Bay Area; it is a community primarily of single-family homes. The City Council established a recycling program in 1972; a community interest groups administered a twice monthly drop-off program. Since then the program has received funding assistance from the California Employment Development Department and Comprehensive Employment Training Assistance (CETA Title VI). Most recently they received a grant from the State Solid Waste Management Board for \$45,000.

The program includes curbside pick-up of residential source separated materials. The materials collected are glass, aluminum, other metals, newspaper, and magazines on a weekly basis. Initially, home pickup was done on a subscription basis, but was shifted to free collection which resulted in a five fold increase in participating residences. Two 3/4-ton trucks with attached bins collect the recyclables. City residents may also bring recyclables to the recycling center and receive payment. El Cerrito purchases glass, metal, news; the program also accepts donations of these items as well as used motor oil, mixed paper, and wine bottles. The items are in turn sold to the appropriate markets.

Livermore, California

Livermore Recycles

Type of Program: Voluntary curbside collection and recycling program
Size of Community: 50,000
Products: Newspapers, mixed metal, clear glass, colored glass
Start-up Date: May 15, 1978
Project Contact: Mrs. Lois R. Hill
874 Adams Avenue
Livermore, California 94550
(415) 447-5699
or
Bill Brandt
Livermore Disposal Service
(415) 447-1300

The City of Livermore is located on the fringes of the metropolitan San Francisco Bay Area in the Livermore-Amador Valley. The city has a population of 50,000.

For the past eight years the city has had a recycling center; this has been replaced by the free voluntary curbside recycling program. The program was initiated by the Livermore City Council. The operation is staffed and run by the local scavenger company, the Livermore Disposal Service. The City, Disposal Service and the community recycling center were all involved in the publicity program. After about three months operation, the program has about 18% participation of single family homes. Apartments are not included. Wastes must be separated into four categories: newspapers, mixed metals, clear glass, and colored glass. A two person crew collects recyclables every other week using a pick-up truck with trailer equipped with bins.

San Luis Obispo, California

Separation of Office and Residential Trash (SORT)

Type of Program: Community-wide voluntary curbside recycling program
Size of Community: 35,000-48,000
Products: Cans, bottles, newspapers, high-grade office ledger
Start-up Date: April 4, 1977
Project Contact: Terry Conner
SORT Recycling Program Coordinator
210 Marguerita #3
San Luis Obispo, California 93401
(805) 543-1969

The City of San Luis Obispo, located in central coastal California, has a population of 35,000 that is expanded to 48,000 by students. As a result of a landfill alternatives study done as a part of the county of San Luis Obispo's Solid Waste Management Plan, a demonstration curbside collection program was initiated by the county. The San Luis Garbage Company provides the separate collection. EPA provided an initial grant of \$43,750; the city also added funds for publicity. A community-based advisory group supplied volunteers for publicity work.

For the residential pick-up portion, cans, bottles, and newspapers are collected each week on the regular collection day. Single-family homes as well as apartments and mobile homes are included. The refuse hauler uses a flat-bed truck-trailer system with 3 containers operated by a two person crew. Participation is estimated at 63% of the residences in the city.

Somerville, Massachusetts

Somerville Saves

Type of Program: Separate collection of residential recyclables

Size of Community: 90,000

Products: Paper, all glass and cans

Start-up Date: December 1975

Project Contact: David Reilly, Superintendent of Highways
Tramey Road
Somerville, Massachusetts 02144
(617) 625-6600

Somerville is an urban community in the Boston area with a population of 90,000. On June 15, 1975, the town was awarded a 3-year grant of \$122,000 (35 percent of a \$345,000 project) to implement weekly separate collection of paper, glass, and cans.

The program, requires householders to separate recyclables into two categories: 1) paper and 2) all glass and cans. These two elements are simultaneously collected in a compartmentalized vehicle each week. Non-recyclable mixed waste is collected by conventional packer trucks. The ordinance that mandates this separation level also includes an anti-scavenging provision.

An extensive community education effort has been mounted. During the first 3 months of the program, approximately 9 percent of the residential waste stream has been recovered and sold for recycling. The sale of all materials is guaranteed by a minimum price contract. Revenues recovered are presently in the \$10 to \$20 per ton range.

Marblehead, Massachusetts

Recycle Plus

Type of Program: Curbside collection of separate residential recyclables
Size of Community: 23,000
Products: Paper, glass and cans, mixed brown and green glass and cans
Start-up Date: January 1976
Project Contact: Raymond Reed, Director of Public Health
Adams Hall
Marblehead, Massachusetts 01945
(617) 631-0212

Marblehead is a suburban community in the Boston area with a population of 23,000. In June of 1975, the town was awarded a 3-year grant of \$78,000 (31 percent of a \$248,000 project) by EPA to implement weekly separate collection of paper, glass and cans.

The program requires householders to separate recyclables into three categories: 1) paper; 2) glass and cans; and 3) mixed brown and green glass and cans. Those three elements are collected by a compartmentalized vehicle each week. Nonrecyclable mixed waste is collected by conventional packer trucks. The ordinance that mandates this separation level also includes an anti-scavenging provision.

An extensive community education effort has been mounted which has resulted in a 30 percent reduction (by weight) of the residential refuse disposed of by the town during the first 3 months of the program. The sale of all materials is guaranteed by a minimum price contract. Revenues received are presently in the \$15 to \$25 per ton range. As no additional labor has been added, program economics appear to be quite favorable.

APPENDIX C

Waste Generation

Quantities of wastes generated (Survey of Solid Waste Quantity and Composition in the San Francisco Bay Area, Draft Final Report, prepared for California State Solid Waste Management Board, SCS Engineers, June 1978.)

Quantities of Wastes Generated

A recent draft report by SCS Engineers of Long Beach describes the results of a survey of four landfills in the San Francisco Bay Area. A sampling and sorting procedure was used to estimate quantities of solid wastes disposed. For each landfill, waste generation factors were determined and composition estimates were made.

The following charts are taken directly from the June 1978 draft of this report, currently being reviewed by the State Solid Waste Management Board. They are included as examples only, and should not be considered representative of geographic areas other than those actually sampled.

TABLE 26. PREDICTED REFUSE GENERATION

County Containing Site Service Area	County Population (1,000's)		1977-1981 Population Growth Factor	Disposal Site	Service Area Population (1,000's)		Refuse Generation in lbs/capita/day		Service Area Weekly Tonnage (1,000's)		
	1977 Est. (1)	1981 Est. (1)			1977 Est.	1981 Est.(2)	1977 Est.	1981 Est.(3)	1977 Est.	1981 Est.(4)	1981 Est.(5)
Santa Clara	1,217.1	1,294.9	1.064	Newby Island	472.6	582.8	3.34	3.62	5.56	5.90	6.39
San Francisco	660.2	643.2	0.974	Mountain View(6)	660.2	643.2	3.27	3.54	7.56	7.36	7.97
Alameda	1,098.2	1,116.4	1.017	Davis Street	600.8	611.8	2.28	2.47	4.80	4.80	5.28
Contra Costa	605.9	640.3	1.057	Acme	342.1	361.6	3.53	3.82	4.24	4.48	4.85

(1) State of California Department of Finance.

(2) Based on county-wide population growth factor.

(3) Based on increased per capita generation of 2 percent per year.

(4) Estimated generation due to population growth only, constant per capita amount.

(5) Estimated generation reflecting both population and per capita increases.

(6) This data is for the San Francisco Transfer Station and does not include the city of Mountain View (62,877 population).

TABLE 28. SUMMARY OF COMPOSITION SAMPLE DATA

Site	Waste Source	Sample Visit No.	Average Percent Composition for Waste Component (Weight Basis)							
			Organics	Ferrous	Aluminum	Glass	Corrugated	Newsprint	Plastic	Garden
Newby Island	Res.	1	76.9	4.5	1.0	6.6	3.3	8.2	NA	NA
		2	68.9	4.7	1.0	6.6	4.2	10.8	3.9	NA
		3	56.2	5.1	1.0	9.9	1.8	17.7	7.8	NA
	Comm.	1	66.5	5.1	1.0	6.1	14.8	5.9	NA	NA
		2	56.3	7.0	0.6	7.2	17.9	5.4	5.4	NA
		3	56.2	6.4	0.8	8.9	10.2	8.2	8.8	NA
Transfer Station	Res.	1	75.0	3.1	0.7	5.6	5.4	8.4	2.1	NA
		2	61.6	5.0	1.2	9.0	5.2	12.6	5.3	NA
		3	58.6	5.2	1.2	7.3	9.1	11.3	6.3	0.7
	Comm.	1	77.8	2.7	0.2	4.3	10.2	3.0	2.1	NA
		2	61.5	4.8	1.3	6.3	16.6	6.8	3.2	NA
		3	70.2	3.7	0.5	3.6	7.2	3.0	11.8	NA
Davis Street	Mixed	1	64.4	4.7	0.8	7.0	6.2	7.6	2.9	5.8
		2	63.2	5.0	0.8	6.2	4.6	9.4	4.7	5.8
		3	51.3	4.8	1.3	8.3	6.7	11.7	6.3	9.5
Acme	Mixed	1	72.3	4.6	0.5	7.8	3.4	8.5	3.6	NA
		2	54.7	4.6	0.8	8.2	5.5	8.5	3.6	13.9
		3	45.3	6.0	0.9	8.4	10.6	9.4	4.8	13.8

APPENDIX D

Example of Questionnaire Card to Estimate Participation in a Home Pick-up Recycling Program

(Used by E.C. ology of El Cerrito)

The E.C.ology Recycling Center is considering a pilot program in El Cerrito for home pick-up of recyclable cans, bottles, and newspaper. We need the following answers to determine the best area and operational details. Your co-operation will help greatly in developing a successful recycling program for El Cerrito.

Thank you,
Jeff Hill, Chairman

Instructions:

Simply check your answers and drop card in the mail (no stamp is necessary).

1. How many garbage cans does your household use? (1, 2 or 3)
2. Do you recycle (separate cans, glass, or newspaper for re-use) now? Yes No Sometimes
3. Would you participate in a recycling home pick-up service for El Cerrito? Yes No Maybe
4. Would you participate if you had to put your separated trash
 - a. On the curb for pick-up? Yes No Maybe
 - b. In your yard (where it is now picked up) Yes No Maybe
5. If a nominal charge was necessary, would you be willing to pay
Nothing ; up to \$1. per mo. ; up to \$2. per mo. ; upto \$3. per mo.
6. The neighborhood you live in would help us determine how we should plan our program. If you would participate in a home pick-up program, would you please give us:

_____ and _____
(YOUR NAME) (STREET ADDRESS)

Our new services - we are now open every Saturday from 9 to 1 p.m. and have begun taking all waste paper including magazines, phone books, and junk mail. Also, bring us your used motor oil, along with your tin and aluminum cans and all glass.

E.C.ology Recycling Center - east end of Schmidt Lane, El Cerrito
11275 San Pablo Ave., El Cerrito, 94530 234-7445

APPENDIX E

Market Information

1. Secondary Materials Markets
2. Summary of SSWMB's market study for Secondary Materials and Energy Recovered from Bay Area Solid Wastes.
3. Market Situation of Recovered Resources from Solid Wastes (taken from memorandum to ABAG Solid Waste Management Plan Advisory Committee on resource recovery, by ABAG staff members Peter Chiu and Deirdre Kostick)
4. Partial List of Addresses of Secondary Materials Buyers

SECONDARY MATERIALS MARKETS

The following table gives information on the prices and quantities of materials collected at Bay Area recycling centers. The table does not include all centers in operation, but does give an indication of major secondary materials buyers. The buyers in turn were contacted for further information on market capacity; however, the over-the-phone approach was not as successful. Representatives from industry, or persons with contacts in industry should be asked to assist in procuring definite figures on market capacity. Having industry representatives available might lessen the problems of duplication in market surveys, and perhaps reduce industry's hesitation in giving out information.

A summary of the SSWMB contracted UCB study on secondary materials markets is also included.

RECYCLING CENTER SURVEY

MATERIAL	BUYER	RECYCLING CENTER	QUANTITIES (lbs/month)	PRICE
Aluminum	Kaiser	o Eden Valley YMCA (Castro Valley & Hayward)	800 lbs/mo	17¢/lb
		o Merritt College (Oakland)	NA	17¢/lb
		o Marin Environmental Co-op	NA	Pays 17¢/lb
		o Many Hands (Antioch-Pittsburg)	250 lbs/mo	17¢/lb
		o Dublin	170 lbs/mo	17¢/lb
		o Earth-The Ecology Movement (Moraga)	500 lbs/mo	17¢/lb
	Reynolds	o Community Conservation Centers (Berkeley)	2,000-4,000 lbs/mo	17¢/lb
		o San Leandro	400 lbs/mo	17¢/lb
		o Telegraph Community Center (Oakland)	8,000 lbs/mo	17¢/lb
	Markovitz & Fox	o City of Palo Alto	24,000-30,000 lbs/mo	\$390/ton
		o (?) City of San Jose	1,000 lbs/mo	19.5¢/lb
Glass	CIRCO (broker)	o Eden Valley YMCA	32,000 lbs/mo	\$21/ton
		o Marin Environmental Co-op	100,000 lbs/mo	\$21/ton
		o City of Palo Alto	140,000-160,000 lbs/mo	\$20/ton
		o Dublin	6,000 lbs/mo	?
		o Earth-The Ecology Movement	16,000 lbs/mo	\$22/ton
	Owens of Illinois	o Merritt College	NA	\$30/ton
		o Community Conservation Centers	160,000-200,000 lbs/mo	\$30/ton
		o Many Hands	12,750 lbs/mo (total quantity for Owens & Glass Container Corp.)	?
		o San Leandro	8,000 lbs/mo	?
	Glass Containers Corporation	o Many Hands	12,750 lbs/mo (total quantity for Owens & Glass Container Corp.)	?
	Modesto	o City of San Jose	150,000 lbs/mo	\$30/ton
Ferrous metals	Judson Steel	o Eden Valley YMCA (tin)	6,000 lbs/mo	\$30/ton
		o Merritt College (bi-metals)	NA	?
		o Dublin (tin - alternate sales with M & T Chemical)	2,100 lbs/mo (total quantity going to Judson and M & T)	varies
	American Can Company	o Merritt College (tin)	NA	\$20/ton
	Learner	o Marin Environmental Co-op	quantities varies	\$16/ton

MATERIAL	BUYER	RECYCLING CENTER	QUANTITIES (lbs/month)	PRICE
Ferrous metals	M & T Chemical	o Marin Environmental Co-op (tin)	quantities vary	?
		o City of Palo Alto tin	6,000 lbs/mo	\$40/ton
		bi-metals	6,000 lbs/mo	\$20/ton
		o Dublin - alternates sales with Judson (tin)	2,100 lbs/mo (total quantity going to Judson and M & T)	varies
		o Telegraph Community Center tin	8,000 lbs/mo	\$40/ton
		bi-metals	8,000 lbs/mo	\$15-20/ton
Paper	Pacific Nursery	o City of San Jose	40,000-50,000 lbs/mo	\$25/ton
	Markovitz & Fox	o City of Palo Alto (junk metals)	50,000-60,000 lbs/mo	\$17-20/ton
	Sasoon-Sherman	o Berkeley Ecology Center	NA	\$37/ton
	Bay City Paper Stock (Oakland Scavenger)	o Eden Valley YMCA	34,000 lbs/mo	\$30/ton
		o Merritt College	NA	\$25/ton
		o Dublin	36,644 lbs/mo	varies
		o San Leandro (newsprint & corrugated)	40,000 lbs/mo	\$30/ton
	Independent Paper Stock Co.	o City of Palo Alto newsprint	20,000 lbs/mo	\$33/ton
		computer print-out	16,000-20,000 lbs/mo	\$105/ton
		white ledger	20,000-24,000 lbs/mo	\$65/ton
		mixed	varies	\$50/ton
		tabs	6,000 lbs/mo	\$95-125/ton
	Kaiser	o Marin Environmental Co-op (Also sells to Kaiser, Sonoco, and Coastal)	NA	varies
		o Many Hands (Also sells to Pacific)	37,200 lbs/mo	\$28/ton
	Pioneer	o City of San Jose newsprint cardboard	80,000-100,000 lbs/mo 2,000 lbs/mo	\$30/ton ?
	Consolidated Fibers	o Santa Rosa cardboard mixed	25,000 lbs/mo 21,000 lbs/mo 36,000-40,000 lbs/mo	varies varies \$25/ton
	Pleasant Hill-Bayshore	o Earth-The Ecology Movement	100,000 lbs/mo	\$30/ton
	Largent (?)	o Community Conservation Centers	120,000-160,000 lbs/mo	\$30/ton

Summary of Market Potential of Materials and Energy Recovered from Bay Area Solid Wastes, the SSWMB's market study for secondary materials.

The purpose of the state board's study was to determine the potential markets for materials and energy recovered from solid waste. The results of the study generally apply to products of mechanized resource recovery systems, but are useful in examining markets for source separated materials.

Fiber. Waste fiber includes paper, textiles, and wood. The study gives an estimate of $2,050 \times 10^3$ tons per year for production of waste fiber in the Bay Area. Paper stock companies could absorb 100 to 200 tons per day of mixed waste paper. Market alternatives for the fiber include direct users (manufacturers of insulation and building materials), paper stock companies, and brokers.

Ferrous. According to the study sufficient markets are available to absorb all the ferrous metals potentially recoverable in the Bay Area. Markets include steel remelt, copper precipitation, detinners, and scrap dealers. BASWMP estimates for 1980 that 280,000 tons of ferrous metals would be available through hand and mechanical separation. At the time of the report there were no specifications for refuse derived scrap; dealers make comparisons with number 2 bundles.

o Remelt (steel mills/iron foundries)

1. Judson steel, Emeryville could accept 100 to 2,000 tons per month depending on the quality. They would consider a trial, 35 ton sample. Recycling centers get about \$35.00 per net ton for flattened metals.
2. Pacific States Steel, Union City operates an open hearth furnace. They have no experience with refuse derived scrap, but are interested.
3. Phoenix Iron Works, Oakland has experience, and their concern for damage to furnaces is lessening.

o Copper Precipitation

1. LA By-Products (Martinez, San Francisco, Oakland, Sacramento) pays \$25 per ton for scrap. They process the scrap then ship it to the mines. LA By-Products would purchase all Bay Area ferrous scrap from conventional front-end systems.
2. Direct sale to mines is not considered a feasible alternative.

o Detinning

1. M & T Chemical would accept all ferrous scrap from Bay Area waste. They would expand to accommodate all 280,000 tons. M & T are now purchasing flattened cans from recycling centers.
2. Proler-Vernon (southern California) has no limit on the clean scrap it could accept.

o Scrap Dealers (Most are not familiar with refuse derived scrap, but are interested.)

1. Circosta Iron & Metal, San Francisco
2. Markovitz and Fox, San Jose
3. Schnitzer Steel, Oakland is familiar with refuse derived scrap and would purchase all Bay Area scrap.
4. The west coast export market gives lower prices for the scrap.

Aluminum. There are markets available to absorb all of the aluminum potentially recoverable from the waste stream. Markets for refuse derived scrap aluminum include the primary producers, secondary smelters, and scrap dealers.

o Primary Producers (All three major aluminum companies -- Alcoa, Reynolds, and Kaiser -- operate recycling programs.)

1. Reynolds ships their cans to their Alabama smelting plant for reprocessing.
2. Kaiser's cans are processed in San Jose, then shipped to Spokane, Washington for remelting.
3. Alcoa does not operate recycling centers in the Bay Area.

o Secondary Smelters (Virtually all smelter scrap goes into casting alloys. Most smelters are located in Los Angeles area.)

1. Custom Alloys has a capacity of 1.7 million pounds per month.
2. Globe Metals has a capacity of 2 million pounds per month. Both companies have expressed a willingness to purchase refuse derived scrap at a price tied to old sheet prices.

o Scrap Dealers

1. Learner Company, Oakland operates sweat furnaces in which aluminum is selectively sweated from an aluminum/ferrous mix.

Glass. An estimated 1200 tons per day of glass will appear in the waste stream for Bay Area. Below is a summary of the major cullet purchasers.

<u>COMPANY</u>	<u>LOCATION</u>	<u>TYPE</u>	<u>QUANTITIES</u>		<u>PRICE</u>
			<u>CURRENT</u>	<u>MAX.</u>	
Glass Container Corporation	Antioch	Flint	20t/d	300	\$20/t
	Hayward	Flint		230	\$21/t
		Green			
Madera Glass Company (Has a 12 mo. stockpile)	Madera	Green	100t/d		\$20/t
Brockway Glass Co., Inc.	Oakland	Flint	.5t/d		\$20/t
Owens-Illinois, Inc.	Oakland	Flint	130t/d		\$20/t
		Amber Green			
	Tracy	Flint	.3t/d		\$20'
Gallo Glass Co.	Modesto	Green Amber	12	250	\$20
CIRCO	Fresno	Mixed or sep.	200		\$21
Anchor Hocking Corp.	Oakland	Flint	5t/d	75	\$20

Table II. Market Situation of Recovered Resources from Solid Waste

Market situation of recovered resources	Recommended future action
<p><u>OVERVIEW</u></p> <ul style="list-style-type: none"> ● Market stability and reasonable prices for secondary materials are needed ● Freight rates should be adjusted to encourage use of secondary materials ● Recyclers should deal with industrial users directly whenever possible to eliminate broker mark-ups <p><u>Fiber</u></p> <ul style="list-style-type: none"> ● The present market is not large enough to absorb all mixed paper potentially recoverable from urban wastes ● Marketability of paper can be improved by segregating and processing selected quantities of residential, commercial, and industrial wastes thereby producing a better grade mixed paper waste ● Processing the fiber through a fiber recovery system for the production of clean pulp may be feasible, since markets for clean pulp could develop quickly <p><u>Glass</u></p> <ul style="list-style-type: none"> ● Returnable bottles can be reused readily ● Market for reuse of wine bottles could be expanded ● Market for mixed cullet could be expanded ● The market would expand if clean color-sorted cullet is available <p><u>Ferrous Metals</u></p> <ul style="list-style-type: none"> ● There are some potential markets for using ferrous scrap for remelt purposes, copper precipitation and detinning ● Secondary metal dealers are not too familiar with refuse derived scrap but are interested in seeing the product 	

Aluminum

- Primary producers and non-integrated fabricators buy mainly new aluminum scrap which is generated in the production of aluminum and aluminum products
- Most of the old aluminum scrap goes to smelter, but aluminum cans are purchased by the primary producers
- Primary producers are interested in purchasing refuse derived scrap consistent with their specifications
- Secondary smelters are willing to purchase a refuse derived scrap at a competitive price

Tire

- Retreading is the only commercially established method for the reuse of old tires

Compost

- Market for large scale compost projects is not yet available
- Potential users may not be comfortable using compost produced from municipal solid waste and sludges because of the impurities (plastics, glass fragments, etc.) and because of potential health problems
- Marketability of compost produced from plant debris and agricultural waste is promising
- On a smaller scale, park and recreation services, as well as home gardeners, may provide an ideal market for good grade compost

Synthetic gas from pyrolysis of solid waste

- Could be used by P G & E or large industrial energy users

Slag from pyrolysis of solid waste

- a) Carbon char
Marketability of carbon char as a fuel, soil conditioner, or activated charcoal is questionable
- b) Ferrous metals
Marketability of ferrous metals recovered from the slag will depend on the purity of the product
- c) Glassy-metallic aggregate (untreated slag)
Could be used as fill material

Energy produced from refuse derived fuel

- The market value of refuse derived fuel (RDF) depends on its dry heating value
- RDF may be used for power generation (but may not meet air quality standards)
- Requirements for retrofitting existing boilers have limited the market potential of RDF
- New facilities for burning of solid fuels offer better market potential of RDF
- Some industries located in northern Contra Costa County expressed interest in using RDF in steam generating plants

Gas recovered from landfills

- Gas recovered from landfills could be marketed

Methanol, ammonia or other chemicals produced from organic fraction of urban wastes

- a) Ammonia
There are some potential buyers of ammonia produced from organic wastes
- b) Methanol
There are some potential buyers of methanol produced from organic wastes

GLASS BUYERS

1. Glass Continer Corporation
P.O. Box 656
Antioch, CA 94509 Tel: 757-0500
2. Glass Continer Corporation
22340 Hathaway
Hayward, CA 94541 Tel: 581-5025
3. Brockway Glass Co.
8717 G Street
Oakland, CA 94621 Tel: 632-7250
4. Owens-Illinois
3600 Alameda Ave.
Oakland, CA 94601 Tel: 436-2190

PAPER COMPANIES

1. Autobale Engineered Waste Control Systems
4050 Horton Street
Emeryville, CA 94608 Tel: 653-8490
2. Bay City Paper Stock Co.
(Oakland Scavenger Co.)
230 Castro
Oakland, CA 94607 Tel: 832-7843
4. Consolidated Fibres, Inc.
5327 Jacuzzi
Richmond, CA 94804 Tel: 527-8500
5. Independent Paper Stock Co.
3300 Wood Street
Oakland, CA 94604 Tel: 654-3787

S.F. Tel: 621-6100
621-6200 plant
6. Fiber Cycle
1351 Lowrie Avenue
So. San Francisco, CA 94080 Tel: 583-1984
7. I & B Enterprises, Inc.
890 Heinz Avenue
Berkeley, CA 94710 Tel: 849-2545

PAPER COMPANIES - (continued)

8. Noran Trading Co.
95 Market Street
Oakland, CA 94607 Tel: 549-2799
9. Pioneer Paper Stock
(Division of Container Co. of Ame.)
2800 Dela Cruz Blvd.
Santa Cruz, CA 95050 Tel: 243-7576
10. Sasson Sherman Fibers, Inc.
1800 Peralta
Oakland, CA 94607 Tel: 465-9700
11. Sunset Fiber Industries
30685 Union City Blvd.
Union City, CA 94587 Tel: 471-2025

ALUMINUM BUYERS

12. Reynolds Aluminum
26291 Production Ave.
Suite 204
Hayward, CA 94545 Tel: 785-1730
13. Reynolds Aluminum -(Metal Cans Plant)
2425 Whipple Rd.
Hayward, CA 94544 Tel: 471-9500
14. Kaiser Aluminum CAN-DO
7700 Edgewater Drive
Oakland, CA 94621 Tel: 271-3469

APPENDIX F

Examples of Marketing Contracts and Agreements

1. Sample Bid Specifications
2. Sample Letter of Intent to Bid for the Purchase of Recovered Wastepapers
3. Sample Contract to Sell Used Papers
(1), 2) and 3) taken from the EPA report, Residential Paper A Municipal Implementation Guide, 1975.)
4. Advance Letter of Intent to Bid for the Purchase of Recovered Products (taken from Resource Recovery Technology: An Implementation Seminar, U.S. E.P.A., Aug. 18-19, 1977.).

SAMPLE BID SPECIFICATIONS

_____ COUNTY

STATE OF _____

DEPARTMENT OF SANITATION

NOTICE

The Purchasing Agent of _____ County, _____, will receive proposals in his office, Room _____, Bldg. _____, until _____, 19____, _____ a.m./p.m. Prevailing Time:

PURCHASE OF WASTE NEWSPAPERS SEPARATELY COLLECTED
UNDER CONTRACT FROM _____ COUNTY

Plans, specifications, and standards for this work, as well as proposal forms may be obtained in the office of the Purchasing Agent, (address) _____. The description which follows is only a summary of the specifications.

The County specifies that the contractor shall guarantee for the period specified in the contract to purchase on a daily basis, at the price as determined in the contract, all waste newspapers collected under any contract from _____ County which are delivered to a mutually agreed upon site(s) located within the legal limits of _____ County.

The exact quantity of newspapers to be sold under this contract is unknown, but is estimated for information purposes only to be about _____ (No. of) tons per month. The newspapers shall be delivered to the receiving site in an "as picked up" condition; no processing of newspapers will be done by _____ County or its collection contractors. All processing, transportation or service charges incurred after delivery of the newspapers to the receiving site shall be the obligation of the newspaper purchaser.

The price per ton (ton equals 2,000 pounds) for purchase shall be the highest marked value as determined by the "Paper Stock Prices Per Ton" for "No. 1 News" in the Market Area of the City of _____ as printed in the *Official Board Markets* ("The Yellow Sheet") less a fixed charge to the object of this bid. The purchaser guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of \$ _____ per ton.

The term of the contract shall be for _____ year(s), commencing _____, 19____ and be renewable for _____ year(s).

The County reserves the right to reject any and all bids.

Envelope to be clearly marked "Sealed Bid on Newspaper Purchase" in the lower left hand corner.

Signed _____
Purchasing Agent

_____ County

_____ COUNTY

STATE OF _____

DEPARTMENT OF SANITATION

SPECIFICATIONS FOR PURCHASE OF WASTE NEWSPAPERS

COLLECTED UNDER CONTRACT FROM _____ COUNTY

STATE OF _____

The following specifications cover the proposed price agreement for purchase of waste newspapers collected under contract from _____ County, _____ (State).

1. *Guaranteed Purchase of Waste Newspapers:* Notwithstanding any reason, including but not limited to work stoppages, the contractor shall guarantee for the period specified in the contract to purchase on a daily basis (weekdays only, including holidays except for Christmas Day and New Year's Day) at the price as determined in the contract all waste newspapers collected under any contract from _____ County which are delivered to a receiving site mutually agreed upon by the purchaser and County at hours mutually agreed upon by the purchaser and County. The receiving site shall be located in _____ County (unless another place is specifically agreed to by purchaser and the County).
2. *Quantity and Condition of Newspapers:* The exact quantity of newspapers to be sold under this contract is unknown. For its own purposes, _____ County has estimated that the quantity may be about _____ tons per month. This estimate is furnished for information only and in no way is given as a minimum, maximum, or average amount of newspapers to be sold. The newspapers shall be delivered on the same day as they are collected to the receiving site in an "as picked up" condition; no processing, bundling, or baling will be done by _____ County or its collection contractors and no adjustment in price shall be allowed for the moisture content of the wastepaper due to inclement weather conditions. All processing, bundling, baling, transportation or service charges incurred upon or after delivery of the newspaper to the receiving site shall be the obligation of the newspaper purchaser.
3. *Verification of Waste Newspaper Weight:* The purchaser shall deliver a certified weighing slip to the County or its agent at the time of delivery at the receiving site and such weighing slip may be verified by the County. The County reserves the right to challenge the weight as determined at the receiving site and to verify same at weighing scales located at a County weighing station. In case of discrepancy between weights determined at the receiving site and County weighing station, the weight determined at the County station shall be used to determine the price for said waste newspaper.

4. *Form for Bid:* The price per ton (ton equals 2,000 pounds) for purchase shall be the market value, or if a range of market values exists, the highest market value within the range, as determined by the "Paper Stock Prices Per Ton" for "No. 1 News" in the Market Area of _____ as printed in the *Official Board Markets* ("The Yellow Sheet") (published by Magazines for Industry, Inc.) less a fixed charge to be the object of this bid. Notwithstanding anything to the contrary here before set forth, the purchaser guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of \$_____ per ton.
5. *Term of Contract:* The term of the contract shall be for _____ year(s), commencing _____, 19_____; the County shall have the option of extending the contract for an additional _____ year(s) period under the same terms and conditions. The County shall give thirty (30) days notice prior to the expiration date of its exercise of the option.
6. *Compliance with Laws and Regulations:* The contractor shall be responsible for the conduct of his employees in this service. All laws, Ordinances and Regulations pertaining to the collection, transportation, and disposal of refuse shall be observed.
7. *Payment:* The contractor shall pay to _____ County on a bi-weekly basis the amount due for waste newspapers received at the receiving site. Payment shall be due and payable within ten (10) calendar days from the date of receipt of the last waste newspapers delivered during the bi-weekly period.
8. *Form of Contract:* The successful bidder will be required to enter into a contract which contains additional terms and conditions to carry out the foregoing.

This agreement shall be contingent on satisfactory performance.

SAMPLE

LETTER OF INTENT TO BID FOR THE PURCHASE OF RECOVERED WASTEPAPERS*

WHEREAS, the _____ Corporation (hereinafter called the CORPORATION) endorses resource recovery from municipal solid waste as a means toward a cleaner environment and preservation of natural resources, and

WHEREAS, the _____ Jurisdiction(s) (hereinafter called the JURISDICTION) is working toward establishment of a source separation of wastepaper program from municipal solid waste,

THEREFORE, it is mutually agreed between the CORPORATION and the JURISDICTION to work together as follows:

- (1) The JURISDICTION is planning for the separate collection of _____ tons per week or more of source separated _____ papers _____ in a form usable and acceptable to the CORPORATION according to the specification attached to this Agreement and made part hereof.
- (2) The CORPORATION will communicate to the JURISDICTION that information about its use technology and business practices which the CORPORATION at its sole discretion shall consider necessary so as to assure receipt of the recovered material in form and cleanliness necessary for use by the CORPORATION. Such communication shall be on a non-confidential basis, unless otherwise subject to a subsequent confidentiality agreement.
- (3) The Specification for acceptance of the recovered product shall be as Attachment 1 and made part of this Agreement by reference.
- (4) The CORPORATION, as an expression of its support of the wastepaper recovery program, agrees to respond to a request for bid for the sale of all recovered _____ product resulting from the implementation of a separate collection program for an average of _____ tons per week by the JURISDICTION and delivered in accord with the above specifications and according to "Additional Conditions" of the CORPORATION'S which may subsequently be made part of this Agreement by reference as long as agreed upon by both parties and according to the following points:
 - (a) the purchase order will be open for five (5) years.
 - (b) the CORPORATION has the right to reject any material delivered which does not meet specifications, at the expense of the JURISDICTION.
 - (c) the monthly price paid shall be determined according to the listed prices for *(recovered wastepaper)* as published in the last issue of the preceding month in *(publication)*, using the mid-range (or high-side or low-side) of the quotation less \$ *(to be submitted at the time of bid)* per ton, or \$ *(specified)* per ton floor price, whichever is greater, for the duration of the contract, f.o.b. location(s) within the JURISDICTION;
or
 - (c) the monthly price paid shall be determined according to the listed price for *(recovered wastepaper)* as published in the last issue of the preceding month in *(publication)*, using the mid-range (or high-side or low-side) of the quotation times *(to be submitted at time of bid)* percent or \$ *(specified)* per ton floor price, whichever is greater, for the duration of the contract, f.o.b. location(s) within the JURISDICTION.
 - (d) the bid will be subject to *force majeure*.

*Source: National Center for Resource Recovery, Inc., Washington, D.C.

(5) For the wastepaper recovery program now being planned for the JURISDICTION, this public body may be required to advertise for purchase of any recovered materials. Should such public bids be advertised, this LETTER of INTENT may be entered as a responsive bid. This is not to preclude award to highest offer for purchase of the recovered material which meets all other requirements of the request for bids.

(6) The JURISDICTION and the CORPORATION mutually agree to continue communication between this date, and the date of implementation of the wastepaper recovery program. Implementation is now estimated at one year hence.

(7) This Agreement is contingent upon the JURISDICTION or other designated public body proceeding with plans for implementation leading to procurement and construction prior to (*specified date*), a mutually extendable date.

Witnessed by:

JURISDICTION

By _____

Witnessed by:

CORPORATION

By _____

ATTACHMENT

Sample Specifications for Recovered Newspapers

1. Consists of old newspapers, including the normal percentage of rotogravure and colored sections; collected and handled separately from regularly collected municipal solid waste; packed loose as received.

Source: Garden State Paper Company.

2. Consists of folded newspapers, including the normal percentage of rotogravure and colored sections; packed in bales of standard dimensions, not less than 54 inches long, approximately 1000-1500 lbs. per bale; *Moisture:* packed air dry; *Prohibitive materials:* less than .5%; *Outthrows:* less than 2%; *Water solubles:* less than 2% of the acceptable paper; *Organic solubles:* less than 2% of the paper.

Source: American Paper Institute.

SAMPLE CONTRACT TO SELL USED PAPERS*

This Agreement entered into this _____ day of _____ 1974, by and between WASTE PAPERS, INCORPORATED, a _____ Corporation, with business offices at _____, party of the first part, hereinafter referred to as "Contractor," and THE COUNTY BOARD OF ARLINGTON COUNTY, VIRGINIA, a body corporate, party of the second part, hereinafter referred to as "County."

WITNESSETH:

That for and in consideration of the mutual promises and covenants herein contained, and Ten Dollars (\$10.00) in hand paid, each to the other, receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. Contractor agrees to purchase on a daily basis all waste newspapers collected on behalf of Arlington County, Virginia, either by County or its collection agents, and delivered daily to a mutually agreed upon receiving site located in Arlington County, Virginia; Alexandria, Virginia; or Washington, D.C.
2. Contractor agrees to accept delivery of all waste newspapers at its receiving site daily (Monday through Saturday, including all holidays except Christmas and New Year's Day) between the hours of _____ A.M. through _____ P.M.
3. It is mutually understood and agreed that County is not restricted as to either the minimum or maximum quantity of waste newspapers to be delivered to Contractor and that no adjustment shall be made on account of the moisture content of the waste newspapers due to inclement weather conditions.
4. It is mutually understood and agreed that waste newspapers shall be delivered to the receiving site in an "as picked up" condition and that no processing, bundling or baling of newspapers will be done by County or its collection agents; but that all processing, bundling, baling, transportation or service charges incurred after delivery of the waste newspapers to the receiving site shall be at the expense of Contractor.
5. Contractor shall deliver a certified weighing slip to the County or its agent at the time of delivery at the receiving site and such weighing slip may be verified by the County. The County reserves the right to challenge the weight as determined at the receiving site and to verify same at weighing scales located at the County Transfer Station. In case of discrepancy between weights determined at the receiving site and County Transfer Station, the weight determined at the County Transfer Station shall be used to determine the price for said waste newspapers.
6. Contractor shall pay to County on bi-weekly basis the amount due for waste newspapers delivered to its receiving site. Payment shall be due and payable within ten (10) calendar days from the date of receipt of the last waste newspapers delivered during a bi-weekly period. Such payment shall be accompanied by an itemized list of daily receipts.
7. It is mutually understood and agreed that the price per ton (2,000 pounds) to be paid by Contractor to County shall be computed on the following basis:

The price per ton (2,000 pounds) of waste newspapers delivered during a calendar week (Sunday through Saturday) shall be determined by reference to *Official Board Markets* ("The Yellow Sheet") published by Magazines for Industry, Inc. and shall be the highest market value quoted in "Paper Stock Prices Per Ton" for "No. 1 News" in the market area of "Philadelphia" less a fixed charge of ten dollars and fifty cents (\$10.50).

*Source: Arlington County, Virginia

The issue of *Official Board Markets* to be used in determining the price per ton to be paid by Contractor shall be the first publication date within each week. However, if no issue of *Official Board Markets* is published during the week, the last issue thereof published the preceding calendar week shall be used in determining the market value for the said week.

Notwithstanding anything to the contrary heretofore set forth, Contractor guarantees to purchase all accumulated and delivered waste newspapers at a minimum price of \$10.00 per ton.

8. The initial term of this Contract shall be for a one-year period beginning _____ and County shall have the option of renewing the Contract for one (1) additional year under the same terms and conditions by giving a 30-day notice prior to the expiration date hereof.

9. Contractor shall not assign this Contract or any interest therein without the prior written consent of the County thereto.

IN WITNESS WHEREOF, _____

_____, has executed this Agreement on behalf of the County Board of Arlington County, Virginia, a body corporate, pursuant to a resolution of said Board, duly adopted on _____; and Waste Papers, Incorporated has caused this Agreement to be executed in its corporate name by its _____ and its corporate seal to be hereunto affixed, duly attested by its _____; said officers being thereunto duly authorized all as of the day, month and year first hereinabove written.

ATTEST:

WASTE PAPERS, INCORPORATED

ATTEST:

By _____
THE COUNTY BOARD OF ARLINGTON
COUNTY, VIRGINIA

By _____

ADVANCE LETTER OF INTENT TO BID FOR THE PURCHASE OF RECOVERED PRODUCTS

WHEREAS, the _____
Corporation (hereinafter called the CORPORATION) endorses resource recovery from municipal solid waste as a means toward a cleaner environment and preservation of natural resources; and,

WHEREAS, the CORPORATION recognizes the need to develop firm expressions of intent to purchase materials or energy products recovered from waste within known financial parameters as part of the planning process for a new endeavor such as this; and,

WHEREAS, the City of Anytown (hereinafter called the JURISDICTION), is evaluating the prospects of substituting resource recovery for the traditional means of solid waste disposal in its area; and,

WHEREAS, the JURISDICTION recognizes the need to establish product revenue bases for the determination of the economic feasibility of processing up to _____ tons per day of municipal solid waste to produce up to _____ tons per day of _____ (hereinafter known as the PRODUCT) in a form usable and acceptable to the CORPORATION according to the Specifications attached to the AGREEMENT and made part hereof; and,

WHEREAS, the JURISDICTION may wish to assign this AGREEMENT to either public or private groups (hereinafter called the ASSIGNEE) who may operate a resource recovery facility for the JURISDICTION and thus have a requirement for a user of the quantity of PRODUCT herein described.

THEREFORE, in consideration of the fact that the legal authority to sell recovered products may rest upon a requirement to advertise for the purchase of such products, it is mutually agreed between the CORPORATION the JURISDICTION that:

I. The CORPORATION, as an expression of its support of the municipal solid waste recovery program, agrees to:

- (1) offer herein a firm commitment to bid for the purchase of _____ tons per day of the recovered PRODUCT at prices not less than those entered here should the JURISDICTION or its ASSIGNEE be required or decide to effect a competitive procurement; and,
- (2) agrees that if public bidding is not necessary and not the course chosen by the JURISDICTION or its ASSIGNEE, then the conditions of the AGREEMENT may be considered as a bona fide offer to purchase the recovered PRODUCT at prices not less than those stated here.

(3) respond, should a bid be required, with a bona fide offer to purchase which will include the following:

(a) It will be a firm bid for five (5) years offering an Exchange Price either fixed or related to a commodity quote, and if the Exchange Price is not fixed, it will offer a Floor Price below which the Exchange Price will not fall during the term of the contract.

(b) The periodic price paid shall be \$____ less than the ____ of the previous period's quotations published in ____

(c) If the Exchange Price is not fixed, a Floor Price will be bid which will not be below \$____ per ton f.o.b. (fill in dollar amount) the recovery facility (or CORPORATION'S plant -- choose one).

(d) The CORPORATION shall retain the right to reject any material delivered which does

not meet Specifications. Such rejection will be at the expense of the resource recovery plant.

- (e) The bid will be subject to force majeure.
- (f) It will be noted the Additional Conditions of the CORPORATION covering general terms and conditions of purchase, acceptance delivery, arbitration, weights, and downgrading not explicitly covered in the Letter of Intent or by reference, will be negotiated according to good business practices and include such Additional Conditions as are attached to this AGREEMENT and made a part hereof.
- (g) This AGREEMENT is null and void if during the period between its execution and the actual bid or negotiated contract the CORPORATION'S plant ceases operation or ceases use of this or equivalent grade of recovered PRODUCT.

II. In accepting the assignment of this AGREEMENT, the JURISDICTION or its ASSIGNEE agrees:

- (1) to see that the recovery plant establishes specification assurance procedures for the recovered PRODUCT, using good industrial quality control practices in recognition of the CORPORATION's use technology as practiced in their _____ plant, so as to produce and offer the recovered PRODUCT for sale in a form and to the required Specification, usable in the plant with minimum alterations to present processing technology and business practices, and
- (2) to require, should a contract be effected as a result of this AGREEMENT, that the PRODUCT be delivered to the CORPORATION according to conditions and prices determined herein and not diverted to the spot market which may on occasion be higher than the Exchange Price determined by the pricing relationship set forth here or as modified by the contract.
- (3) that should the CORPORATION's plant, as specified herein, become saturated in its

ability to handle the recovered PRODUCT as a result of other Letters of Intent issued by the CORPORATION being converted into firm contracts for delivery and purchase prior to effecting such arrangements as a result of this commitment, the provisions of this AGREEMENT become null and void.

The JURISDICTION will consult with and obtain the approval of the CORPORATION concerning its intent to assign this AGREEMENT to any ASSIGNEE prior to such assignment.

The CORPORATION will communicate to the JURISDICTION or its ASSIGNEE that information about its use, technology and business practices which the CORPORATION at its sole discretion shall consider necessary so as to assure receipt of the recovered material in form and cleanliness necessary for use by the CORPORATION. Such communication shall be on a nonconfidential basis, unless otherwise subject to a subsequent confidentiality agreement.

The JURISDICTION in executing this AGREEMENT does not represent or bind itself to any obligation, legal or otherwise, that a resource recovery plant will in fact be constructed or placed into operation as a result of its present efforts.

This AGREEMENT shall become null and void on _____ without any obligation on either party unless steps toward assignment are made or it is mutually extended by both the CORPORATION and the JURISDICTION.

Witnessed by:

JURISDICTION

By: _____

Date: _____

Witnessed by:

CORPORATION

By: _____

Date: _____

ATTACHMENT

Specification for _____

APPENDIX G

Examples of Local Ordinances

1. Samples of Separate Collection Ordinance including an Anti-Scavenging Provision*
2. Sample Refuse Disposal and Collection Ordinance*
3. Ordinance Regulating the Collection and Disposal of Newspapers Placed at Curbside in the City of Berkeley

*Taken from EPA report, Residential Paper Recovery, A Municipal Implementation Guide

**SAMPLE OF SEPARATE COLLECTION ORDINANCE
INCLUDING AN ANTI-SCAVENGING PROVISION***

**SEPARATION, BUNDLING, BAGGING AND
PICK-UP OF NEWSPAPERS FOR RECYCLING**

Section 3-A. After adequate notice has been published, posted, and publicized for a garbage and refuse district or for a particular collection area, it shall be mandatory for persons who are owners, lessees, or occupants of residential dwellings in the Town to separately bundle newspapers for collection and recycling.

Said newspaper shall be placed in kraft bags or tied securely with rope or cord in packages not exceeding fifty (50) pounds, and said packages shall be placed separately at the curb for collection on days specified by the Commissioner of Public Works under the rules and regulations prescribed.

After said newspaper bundles are placed in the vicinity of the curb for pickup collection and recycling, it shall be unlawful and an offense against this Ordinance for any person, firm, or corporation other than the owner, lessee, or occupant of a residential dwelling, or licensed cartman for that area or district to pick up said newspaper for his own use.

**Source: Town of North Hempstead, New York, Effective September 1, 1971.*

SAMPLE REFUSE DISPOSAL AND COLLECTION ORDINANCE*

Definitions

- A. GARBAGE shall mean all animal, fish, fowl, fruit or vegetable waste incident to and resulting from the use, preparation and storage of food.
- B. REFUSE shall mean all waste or rubbish of any kind, including garbage, either combustible or noncombustible in nature, having little or no value except as waste or rubbish, or as may be determined through a recycling process.
- C. NEWSPRINT shall mean a common and inexpensive machine-finished paper made chiefly from wood pulp and used mostly for newspapers.

Refuse Preparation, Disposal and Collection

A. Preparation of Refuse for Disposal

- 1. Garbage. All garbage before being placed in a container for collection, shall be thoroughly drained and well wrapped. The burning of garbage shall be prohibited unless such burning takes place in an auxiliary fired gas or electric incinerator approved by the Building Inspector.
- 2. Miscellaneous Refuse. All unwrapped refuse shall be cleaned of garbage before placing same in refuse containers.
- 3. Newsprint. Newsprint shall be separated from all other refuse and shall be collected separately. It shall be tied in bundles or contained loosely in regular covered containers not exceeding 32 gallons in capacity and placed next to the curb or adjacent to the alley in such a manner that it will not be blown or scattered or become frozen to the ground. When so placed, it shall be presumed that all such newsprint is left for collection by Village crews and shall be considered property of the Village.
- 4. Miscellaneous Combustible Refuse. Combustible refuse, excluding newsprint, which cannot be placed in a container, must be tied in bundles or placed in such a manner that it will not be blown or scattered about or become frozen to the ground. Such bundled or contained refuse shall be placed next to the regular collection containers convenient to Village crews, in such a manner as to avoid being a nuisance to the neighbors or the area.

B. Collection of Refuse

- 1. The owner or occupant of every dwelling or place of business where refuse is accumulated shall be required to provide metal or heavy duty plastic containers or containers approved by the Commissioner of Public Works or his designee, equipped with tight fitting covers. Except as otherwise provided herein, all refuse shall be placed in said containers and may be combined therein. A sufficient number of containers shall be provided to hold all refuse accumulated between regular weekly collection periods.

*Source: Village of Shorewood, Wisconsin, January 1974.

2. Except as otherwise provided herein, all refuse containers shall be placed outside of the dwelling or building and near the alley or to the rear of a driveway convenient to the collectors, in such a location so as not to be a nuisance to the neighbors or create a nuisance to the area.

3. Refuse containers shall be of a size not to exceed 32 gallons capacity. A single container when filled shall not weigh more than 60 pounds.

4. Covered containers for special newsprint collection will be designated by a daub of red paint on the cover or by a red cloth attached to the cover handle. Containers shall be replaced when leaking or in any way defective. Containers must be kept covered at all times.

5. There shall be no regular basement or in-building refuse collection. Basement or in-building refuse collection, when requested, shall be provided, but shall be subject to a monthly charge of \$4.00; this monthly charge shall only cover the first 20 minutes each week of collection time required for each property serviced; for any additional time required, each week, to make such collection for each property serviced, additional charges shall be imposed as enumerated under Section D 3 hereof. The conditions and provisions of Subsections D 4 and 5 hereof shall be applicable to this Subsection, and shall govern herein.

C. Newsprint Collected Separately

Newsprint, in accordance with the provisions of Section 11-602.-3 hereof and as herein set forth, shall be collected separately beginning on the first working day of each month or on a schedule established by the Commissioner of Public Works.

1. Containers used for regular weekly refuse collection which hold clean newsprint will not be serviced until the clean newsprint has been removed therefrom unless the newsprint therein has been used to wrap other refuse or is soiled. A red tag shall be affixed by Village crews to such containers holding clean newsprint and other refuse, which tag shall note the violation of the regulation requiring separation of newsprint from other refuse.

2. In addition, the Village shall provide containers for newsprint collection to be located in various designated areas in the Village which shall be determined by the Commissioner of Public Works. Residents may bring their newsprint to such designated areas at any time and place it in the containers so provided.

3. Further, the Village will assist charitable fund raising organizations located within the Village in their paper collection drives by servicing Village approved large commercial type refuse containers suitable for mechanical dumping into Village packer trucks when located in agreed upon areas in the Village. The revenue from said paper collected, less handling charges assessed by the Village, will be returned to said fund raising organization.

.

Commissioner Authorized to Make Additional Rules and Regulations

The Commissioner of Public Works is hereby authorized to make additional reasonable rules and regulations for the administration of the refuse collection services of all types performed in the Village, provided no such regulations and rules contravene the specific provisions of this article and are in no way inconsistent with the established policies of the Village Board.

ps1142

REGULATING THE COLLECTION AND DISPOSAL OF NEWSPAPERS PLACED AT CURB-SIDE IN THE CITY OF BERKELEY.

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. PURPOSE.

The City Council of the City of Berkeley finds and determines that a municipal program for the collection, disposal and recycling of discarded and bundled newspapers placed at curbside is in the public interest and serves to promote the general welfare of the City.

Section 2. DEFINITIONS.

For the purposes of this ordinance the following words and phrases shall have the meanings as set forth hereinafter unless the context appears otherwise:

a. "Person" shall mean any individual, association, firm, organization, sole proprietorship, partnership or corporation, whether or not said entities are operated for profit.

b. "Newspaper" shall mean paper sold or distributed at stated intervals, usually daily or weekly, to convey news, advocate opinions, containing advertisements and other matters of public interest, as well as other paper products, but excluding all magazines or periodicals, all paper products covered or coated with wax, plastic or other similar non-degradable material.

c. "Bundle" shall mean newspapers neatly stacked and bound with heavyweight cord or other similar material.

d. "Non-Profit Organization" shall mean a religious, educational, civic or charitable organization incorporated under the laws of the State of California and the Internal Revenue Code, §501(b)(3).

Section 3. COLLECTION.

a. The City Manager is hereby authorized to delegate the responsibility of conducting such newspaper collection and recycling program to the City Department of Services or to a non-profit organization qualified to conduct such newspaper collection and recycling program.

b. The City Manager shall issue or cause to have issued written guidelines for the administration of such recycling program, which guidelines shall be available for review in the Department of Services.

c. In the event the City Manager determines that a non-profit organization shall conduct such newspaper recycling program, such organization shall conduct such program for increments of one year; at the expiration of each increment, the City Manager shall report to the City Council as to the progress of such program and the City Manager shall make recommendations to the City Council.

Section 4. EXCEPTIONS FOR NON-PROFIT ORGANIZATIONS.

The City Manager may authorize other non-profit, religious or charitable organizations to collect bundled newspapers placed at the curbside, under certain terms and conditions.

Section 5. VIOLATIONS; ENFORCEMENT.

It shall be unlawful for any person, not otherwise excepted by the provisions of this ordinance or as authorized

in writing by the City Manager, to collect bundled newspapers from the curbside in the City of Berkeley. Any person engaging in such unlawful activity shall be guilty of a misdemeanor and may be punished by a fine of \$500 or imprisonment of six months, or by both such fine and imprisonment.

Section 6. POSTING.

Copies of this Bill are hereby ordered published by posting with the vote thereon for two (2) days at the ten (10) prominent places in the City of Berkeley as designated by Ordinance No. 2032-N.S.

At a regular meeting of the Council of the City of Berkeley, held on the nineteenth day of February, 1974, this Bill was passed to print and ordered published by posting by the following vote:

Ayes: Councilmembers Hancock, Hone, Kallgren, Kelley, Rumford, Simmons, Sweeney and President Widener.

Noes: None.

Absent: Councilperson Ramsey

ATTEST: DEYDRE CAMPBELL
City Clerk and Clerk of
the Council

In effect: April 11, 1974

CITY OF BERKELEY



CITY MANAGER'S OFFICE
2180 MILVIA STREET

BERKELEY, CALIFORNIA

(415) 644-6580
94704

May 25, 1978

Ms. Katherine S. Evans, President
Ecology Center
2179 Allston Way
Berkeley, CA 94704

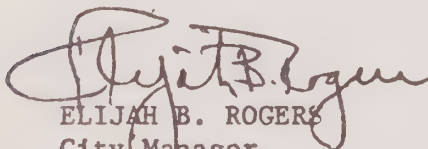
Dear Ms. Evans:

Pursuant to the regulations set forth in Ordinance No. 4689-N.S., the Ecology Center is authorized to continue collection and disposal of newspapers placed at curbside in the City of Berkeley until April 11, 1979 in accordance with the terms previously agreed to between the City of Berkeley and the Ecology Center.

Please note, in addition, that no other group has been given authorization to make curbside newspaper pickups in Berkeley.


Please acknowledge your acceptance of the terms as extended by signing and returning a copy of this letter to this office.

Sincerely,


ELIJAH B. ROGERS
City Manager

cc: Department of Public Works

This is to certify that I agree to comply with the conditions referred to in this letter.


Katherine S. Evans

1 June 1978
Date

APPENDIX H

Example of Buyer's Procedures for Secondary Materials

(Letter sent by MRI Corporation to ecology and recycling groups on November 10, 1977)

MRI

CORPORATION

SUBSIDIARY OF AMERICAN CAN COMPANY

P O BOX 1092B, RAHWAY, N.J. 07065

(Formerly Metals Recovery Division
of M&T Chemicals Inc.)

November 10, 1977

Reply To: 270 East Grand Avenue
P.O. Box 2667
South San Francisco, Ca. 94080

TO: All Ecology Groups

ECOLOGY AND RECYCLING GROUP PROCEDURES

MRI Corporation welcomes the opportunity to participate with you in your resource recovery operation. The following information describes our current policy and procedures with regard to recovered cans and, we hope, aids you in planning your activities:

General Information

1. MRI will purchase both tin plate cans and bi-metal cans. Cans should be free of any foreign material, scrap, paper, etc., and should be, insofar as possible, separated into either tin plate or bi-metal and mixed cans before delivery.
2. For clean, sorted tin cans we will pay \$30 per gross ton, delivered to our plant in South San Francisco. For bi-metal or mixed cans we will pay \$15 per gross ton. Minimum acceptable weight is 1000 pounds. (A gross ton is 2240 pounds).
3. Cans will be accepted between 8:15 a.m. and 4 p.m. Monday through Friday. You will be responsible for unloading; therefore, a dump truck or small container will be most practical. We request you take all boxes, barrels, or containers back with you. (No deliveries between 12 and 12:30 p.m.)
4. We require both a "heavy" and "light" certified weight on the vehicle in which you are delivering the cans. A certified public scale is located at the South San Francisco Tire Company, Grand Avenue and Harbor Way, South San Francisco. You will be reimbursed for the cost of weighing when payment is made on your delivery.

TO: All Ecology Groups

November 10, 1977

RE: MRI Corporation Ecology & Recycling Group Procedures

Page 2

Delivery and Payment Procedure

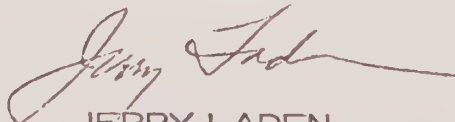
1. When making a delivery, first obtain a "heavy" weight at the certified scale.
2. Report to the receptionist desk in the main office to report the delivery and to receive instructions on where to unload.
3. After unloading, obtain a "light" weight at the certified public scale. Weight tickets, both "heavy" and "light" should be forwarded to our office as soon as possible.
4. Checks for payment are issued on the 20th. of the month for material received during the previous month. For instance, any delivery made in November will be paid on December 20. The certified weight tickets must be available by the end of the month of delivery.
5. When making a delivery or sending in weigh tickets, make sure that you properly identify your organization, and that we have all necessary billing information (name, address, and telephone number).

We hope the above information covers your needs in planning for delivery to our plant. We will be pleased to answer any questions you may have and look forward to continuing the fine relationship we have had with recovery groups.

Our telephone numbers at the plant are: (Area Code 415) 761-0141 and 588-5205.

Sincerely,

MRI CORPORATION



JERRY LADEN
Plant Manager


JL:fw

-2-

APPENDIX I

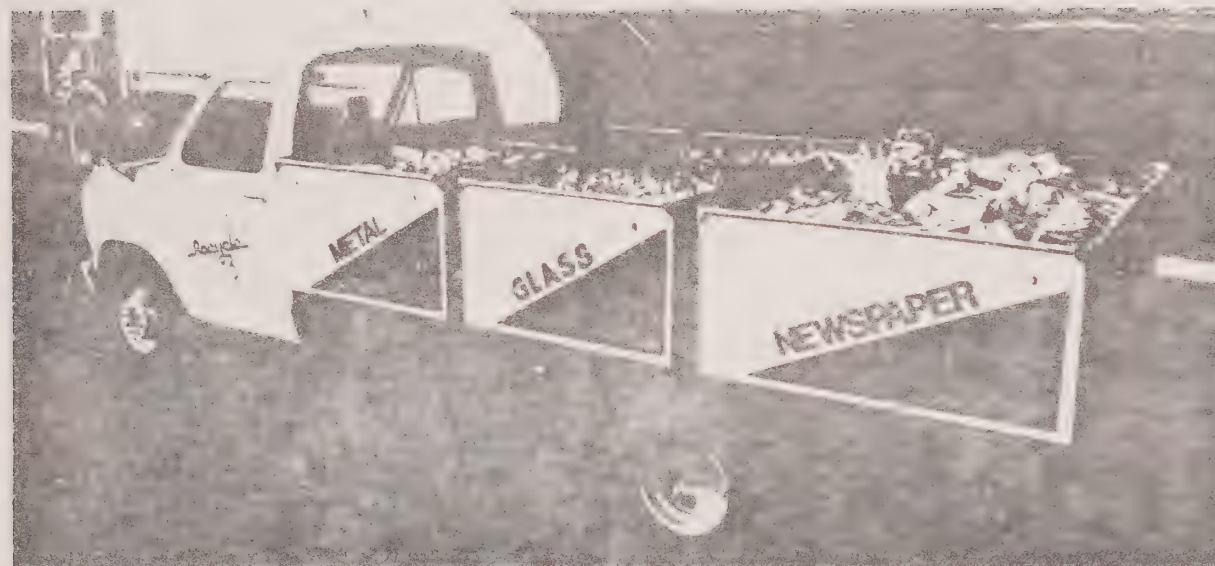
Examples of Promotional Material for Source Separation Programs

- | | | | |
|----|--------------------|---|---------------------------------|
| 1) | Recycle 3 program | - | Santa Rosa |
| 2) | Recycling Project | - | Fresno Clovis Metropolitan Area |
| 3) | Ecology Action | - | Modesto |
| 4) | Livermore Recycles | - | Livermore |

A large, stylized graphic of the word "Recycle" in a bold, rounded, sans-serif font. The letters are composed of thick, dark lines with a lighter inner section, giving it a three-dimensional or double-lined appearance. The word is oriented diagonally from the bottom left towards the top right.

POST OFFICE BOX 633 • SANTA ROSA CALIFORNIA 95402

Recycling is one way everyone can help save our natural resources. It is a way to save energy, hold the line on garbage costs and lengthen the life of our land fills. Recycled paper returns to our area in the form of newsprint, boxes and insulation. Glass is melted to make new containers . . . many used by our local wine and food industries. Aluminum and steel are reformed and de-tinned and used again and again. When you, your family and your neighbors recycle . . . everyone saves! DO YOUR PART . . .



WHAT TO DO

On your regular garbage collection day, place following items clearly visible at curbside.

METAL

All tin, steel and aluminum materials, including aerosol cans, TV dinner trays, lids and caps from jars and bottles should be placed in a separate container. It is not necessary to smash cans but it does help save space.

GLASS

Use a separate container for bottles, jars and glass. Sturdy cardboard boxes or small buckets are best to use. Clear and colored glass can be mixed together. It is not necessary to remove labels, but do take off caps and lids.

NEWSPAPER

Tie in a bundle or place in a sturdy box or shopping bag.

FREE CURBSIDE PICKUP

IMPORTANT!

In Santa Rosa, residents of single family homes and mobile parks can participate in Recycle 3...the free curbside pick up of metal, glass and newspaper.

Special Recycle 3 trucks will pick up your recyclables on the same day as your weekly garbage collection. However, the Recycle 3 trucks may arrive in your neighborhood ahead of your regular garbage truck, so be sure all recyclables are placed at curbside by 6:00 a.m. Please do not use plastic bags for recyclables. Cardboard boxes and buckets will be emptied and left for re-use. Paper bags will be recycled.

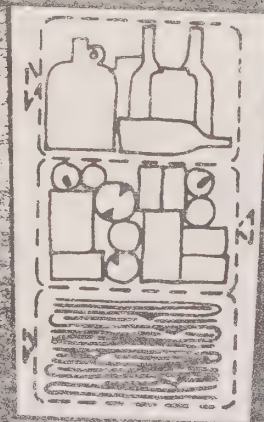
Recycle 3 is a community wide voluntary curbside recycling program. It is offered as a public service to the residents of Santa Rosa by the California Solid Waste Management Board, Redwood Empire District Corporation and the City of Santa Rosa.



A real
and important
service to help
conserve resources
and save energy.

NOW...
Free pick-up of
CANS, JARS,
BOTTLES,
NEWSPAPERS

JUST CALL 237-2165



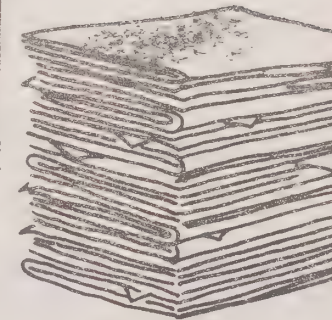
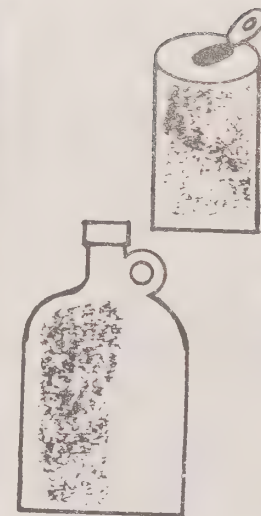
NEWSPAPERS

1. The first step is to identify the problem. This involves understanding the symptoms and the context in which they are occurring.

1990-1991



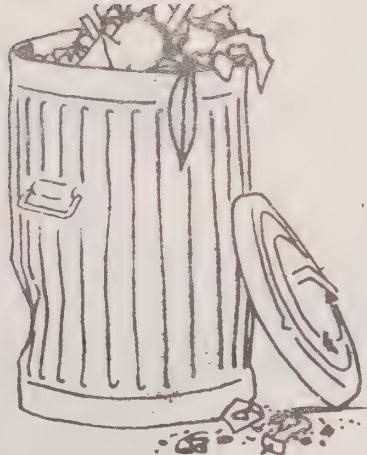
Recycling Project



**"Don't
throw us out
...count us in."**



7-23
FARMER, RAYMOND, CA 95714



Conservation Recycling Garbage

Conservation does make sense. You know it and we know it. So we are now picking up certain types of recyclable materials at your home. It will be a curbside or alley pick-up every two weeks. A small effort required to prepare those materials and a few minutes of time can go far towards helping preserve and extend our resources.

Revenues of the project will be used to cover operating expenses. Any excess income will be used to promote additional resource recovery in the FCMA.

Some simple conservation facts point up the importance of the Fresno Clovis Metropolitan Area Recycling Project. The energy saved by recycling one average glass bottle will light a 100 watt bulb for 4 hours. Recycling just your Sunday newspaper saves enough energy to power your TV for one day, and a 3 foot stack of newspaper saves a tree! Join in turning the tide on waste to protect our future generations. The success of this local, pilot program depends entirely on YOU...and it's easy! Remember, conservation is not a lot of garbage!

No mirrors, pyrex,
light bulbs, TV tubes,
shatter-proof glass
or ceramics.

Please remove
all lids.

BOTTLES & JARS



Recycled glass is used to manufacture new glass and results in big energy savings: Substantial savings in time and electricity with 80% reduction in mining wastes, 50% water savings and 20% less air pollution.

Please remove
all paper labels.

ALL METAL CANS & ALUMINUM

(TV TRAYS, PANS, FOIL)



Recycled tin cans are our only domestic source of tin—a very expensive metal. Aluminum, while not as scarce, takes 95% more electrical power to produce from ore as from aluminum scrap.

KEEP DRY
(No Magazines)

NEWSPAPERS



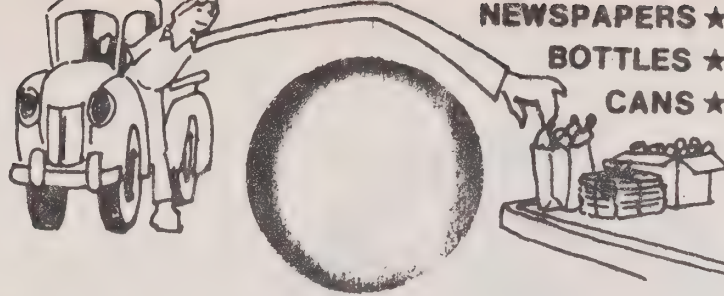
Recycled paper requires much less energy to make into new paper than if wood pulp were used, besides requiring 60% less water and producing 70% fewer pollutants. Old newspapers also can be converted into home insulation material resulting in significant energy savings.



Fresno • Clovis Metropolitan Area

Recycling Project

710 W. Lyman Ave./Fresno, California 93706 / Phone: 237-2165

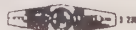


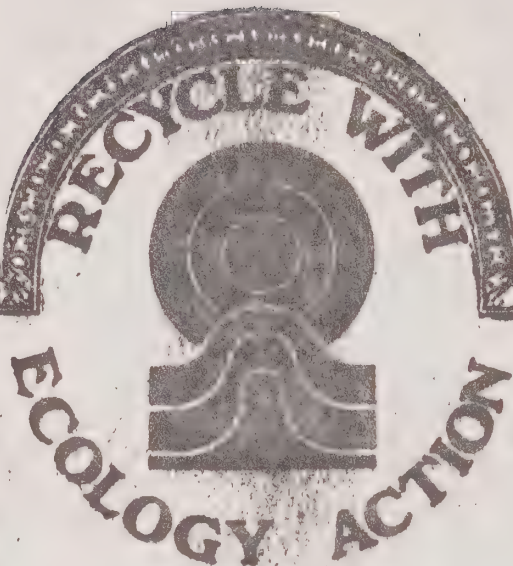
Thank you for taking part in Ecology Action's recycling program. To make our program even more successful, we would like to call your attention to the items checked below. If you have any questions please call us at 529-8587.

- () Place newspapers in bundles or bags, all glass containers in a separate bag or box, and all cans in a separate container.
- () We do not accept magazines at this time.
- () Please remove lids from jars and bottles, place them with the cans.
- () Please tie newspapers in bundles or place them in bags.
- () Place your recyclables by the curb in plain view from the street.
- () Cardboard can be brought to our yard at 1000 N. 9th Street (near Carver) for recycling.
- () We do not accept plastic at this time.
- () We start our routes at 8:00 A.M., please have materials out by 8:00.
- () See message on other side.

Your route driver:

ECOLOGY ACTION RECYCLING CENTER
1000 N. 9th Street, Modesto, California 95352





ECOLOGY ACTION

CURBSIDE RECYCLING GUIDE

SAVE! SORT! SET OUT!

Your pick up day is:

Please separate newsprint, glass bottles, metal cans and motor oil. Place all jar and bottle lids with the cans. Use grocery bags or boxes. We will recycle the bags but return the boxes to you.

Please be sure to place your materials at the curbside by 8 a.m. in plain view of the street from either direction. We drive along each street only once, though you may see us do some backtracking.

We do not pick up on holidays but resume our regular schedule the following week.

FOR MORE INFORMATION OR IN CASE OF MISSED PICK UPS, PLEASE CALL US AT 529-8587.

Ecology Action is a non-profit corporation promoting the environmental well-being of Modesto.

100% Recycled Paper

Livermore Recycles Soon

Free curbside collection of recyclables will begin in Livermore May 15.

THE FOLLOWING ITEMS WILL BE COLLECTED:

- **Newspapers.** Tied or bagged.
- **Mixed Metal.** Aluminum, steel and bimetal cans, plates etc.
- **Clear Glass.** Free of food waste, lids, corks, metal rings and plastic neckbands.
- **Colored glass.** Mixed green and amber glass, free of food waste, lids, corks, metal rings and plastic neckbands.

See reverse side for schedule of recyclable collection.

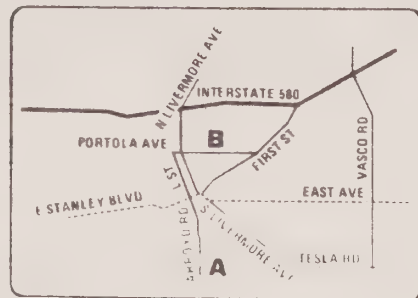


Curb your trash

MAY, 1978						
S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

—A
—B
—A

Livermore Disposal Co. will begin free biweekly curbside collection of recyclables on May 15. Homes south of East Ave., First St. (downtown) and Stanley Blvd. will be served on their regular garbage collection days during the "A" weeks (see calendar at left), homes in north Livermore will be served during the "B" weeks. Please make a note of when recycling will begin in your neighborhood. These recyclables will be collected from the curb in front of your home by a special recycling crew.



JUNE, 1978						
S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

—A
—B
—A
—B
—A

Next week

Livermore Recycles -- a free, curbside, home pickup of recyclables -- begins in your neighborhood next week. It will continue every second week on your regular garbage pickup day. See reverse side for instructions.



Curb your trash

In separate containers, please place at the curb the following materials for recycling before 7:00 A.M.

- **Newspapers.** Tied or bagged
- **Mixed Metal.** Aluminum, steel, and bimetal cans, plates etc.
- **Clear Glass.** Free of food waste, lids, corks, metal rings and plastic neckbands.
- **Colored glass.** Mixed green and amber glass. Free of food waste, lids, corks, metal rings and plastic neckbands.

If you have any questions, call Livermore Disposal Co. (447-1300)

Thank you

for taking part in the new curbside recycling program in Livermore. We regret to note, however, that some of your materials were improperly prepared or sorted. Please note the item(s) checked below:

- () Please place newspapers in bundles or bags.
- () Please separate clear from colored glass and place each kind in a separate container.
- () We do not accept magazines, cardboard or plastics at this time.
- () Used crankcase oil may be recycled at the East Avenue Fire Station every Saturday and Sunday morning, from 9 A.M. - Noon.
- () Please remove lids, cork, metal rings and plastic neck bands from bottles and jars.
- () See message on reverse side.

Your route driver: _____

If you have any questions, please call Livermore Disposal Service at 447-1300



Curb your trash

APPENDIX J

Guidelines for a Community Awareness Program

(from Source Separation in Somerville and Marblehead, Massachusetts:
The Community Awareness Program, Discussion Draft, prepared by Re-
source Planning Associates, Inc., Cambridge, Mass., March 1976)

3. GUIDELINES FOR A COMMUNITY AWARENESS PROGRAM

The previous chapter provides a detailed description of the community awareness programs for the Somerville and Marblehead recycling programs and an evaluation of each program component in both communities. The purpose of this chapter is to synthesize the important findings of Chapter 2 and to develop guidance and suggestions for the conduct of a community awareness program related to recycling. While the specific approaches applied in either Somerville or Marblehead may not be directly relevant to other communities, it is our hope that the general suggestions offered below will serve as guidance for a wide range of communities throughout the United States.

First we present suggestions that apply generally to these kinds of programs and are not keyed to any specific component. We then develop more specific guidance for each component, paralleling the discussion in Chapter 2.

A. GENERAL GUIDELINES

SCHEDULING

If possible, recycling programs that involve homeowner participation or specific public works collections should be planned for start-up at a time of year when weather conditions are favorable. Severe winter weather created operational problems and citizen disaffection in Somerville, thereby increasing the program team's workload.

LOCAL PARTICIPATION

The program team should include local people, preferably residents of the community who have lived in the town long enough to know something about local newspapers, community groups, and commercial establishments. It is not necessary that the entire staff live in the community; specialists, such as graphics experts and media consultants, may not be available locally and would certainly be of value to the team.

CLARIFICATION OF ROLES

A community recycling program involves many active participants, both official and unofficial. At the earliest possible point in the

planning phase, the role and authority of the program team must be clarified and agreed to. For ease of operations, the team should have as much flexibility and authority as possible (e.g., to issue news releases) within limits dictated by community policy. It follows, however, that with greater authority and flexibility, the team must act responsibly in its acquired capacity as an official community representative (e.g., in the quality and tone of news releases).

PLANNING THE PROGRAM

Planning is a must for a successful awareness program, as is evidenced by the complex interrelationships of the elements described in Chapter 2. There are clearly many ways to communicate with the public about recycling, and each program will have its own individual focus, consistent with the specific needs of the community. A public attitude survey, such as that conducted in EPA's Somerville and Marblehead feasibility studies, is a useful way to focus on community needs and attitudes and identify the types and mix of program elements most suitable for the community. In Somerville the calendar, with its themes of historic Somerville, open spaces, and natural resources, offered a subtle linkage to recycling and has been the major program effort to date. In Marblehead, due to the particular circumstances and timing, the economic, cost-saving theme was heavily used. Implementing all of the program components listed in Chapter 2 required a significant expenditure of time and funds. The program teams were paid (albeit at low hourly rates), and they brought to the program considerable interest as well as communications skills. In programs that involve exclusively volunteer efforts, or in which people do not have large amounts of time to spend, it is of the utmost importance in the planning phase to focus the program effort on those activities that will have an important impact in the community and that can be performed well with available resources. Planning of timing is very important. Furthermore, maintaining community contact after the recycling program has started (to sustain interest and for feedback) is essential, and it is important not to expend the entire awareness effort (and budget) before the program begins. The whole program must be planned carefully.

COMMERCIAL SUPPORT

Commercial support may be vital to the success of a community awareness program, particularly where financial resources are limited. The Somerville program illustrates this point very well. There are many ways in which local commercial establishments can help a program, and the following types of firms should be targeted for special attention by program staff: printers; paper distributors; utility companies; fast-food chains for active participation and support; and small

commercial establishments for such purposes as poster display. Donations of services and merchandise may be more readily obtained than donations of money.

B. SPECIFIC PROGRAM COMPONENTS

It is important in the planning phase of the program to decide not only on the approach to individual components, but also on overall strategy for coordinating all components to achieve the program objectives. The objective of such strategy should be that each component will reinforce a message or a theme in as many interesting and creative ways as possible. Comments and guidance for specific components are provided below.

MEDIA

All of the media employed in Somerville and Marblehead have been discussed in this report in the interests of completeness. We recognize that many communities will not be able to provide such a comprehensive multimedia program. However more limited programs can still be effective if the media used are carefully selected on the basis of the community's nature and needs. At the same time, we recommend that the following elements should be considered essential ingredients of any community awareness program, whatever its scope:

- Program logotype and title
- Newspapers
- Community letter
- Commercial television
- Posters.

Recycling Program Logotype and Title

- A logo and program name can be an effective and ongoing reminder of the program, especially if displayed in prominent places, such as recyclable collection vehicles.
- The logo should be developed early in the planning phase.

- Suggestions for the logo and/or name should be solicited from the public as a whole, or from specific community groups, such as schoolchildren.
- A contest with a prize can be an effective way to generate community enthusiasm for the program and as a vehicle for the program to "give" something to the community.

Newspapers

- Newspaper coverage is very effective and relatively inexpensive. It should be a part of every community awareness program.
- At the beginning of the planning phase, contact should be established with the reporting and editorial staffs of all local and regional newspapers.
- Regional newspapers may feature columns with regular news about specific communities. Papers should be checked for such columns.
- The program team should be aware of the types of news stories or features desired by particular papers. Some papers give heavy coverage to community activities; others focus on news items.
- The program team should carefully plan the timing of news releases and feature articles so that there is a realistic chance of the paper's printing them. It is a waste of resources to spend time writing articles that will not be published.
- All newspapers have deadlines for articles. The program team should be aware of, and abide by, them, particularly where the papers are published infrequently.
- Intensive coverage should be planned for the two-month period preceding and following recycling program start-up.
- Paid advertisements should be considered as program funds allow, both to provide a more flexible communication format and to serve as a reciprocal gesture to the papers in anticipation of their full support of the program.

- Early news stories should feature, among other things, pictures and interviews with the collection force as good "human interest" news and as a morale- and status-booster for the collectors.
- News coverage should be as detailed and informative as possible, and should feature as many photographs of people, equipment, and recyclables as possible.
- Instructions for recycling should appear in local newspapers concurrently with the mailing of instructions to each household.

Community Letter

- The letter is used to communicate personally with each household. It can effectively convey the community's official commitment to the program and can provide detailed instructions for recycling. It is an important component of the community awareness program.
- Careful consideration should be given to the matter of who signs the letter. Whoever signs it is committed to supporting the program, and the broad range of support reflected in the Somerville signatories may be of great importance to the program.
- The letter should be as brief and as simple as possible.
- The envelope should be designed to avoid any resemblance to "junk" mail.
- The letter should be addressed, if possible, to the individual resident by name to assure that as many people as possible get the message.
- The letter should be distributed approximately ten days before program start-up.
- Distribution can be effected through the Postal Service (bulk mail rates) or by volunteer hand distribution program (e.g., Boy Scouts). It could be timed to coincide with another mass mailing, such as the calendar mailing, in order to conserve distribution resources. However combined mailings diminish the positive impact of phased mailings.

- Volunteer distribution can be an effective means of saving program funds and involving community groups actively in the program.
- Program funds can be conserved by obtaining commercial support in the form of reduced printing and paper costs.
- A number of the objectives of the letter could be served almost as well by receiving the cooperation of all local newspapers to print an "open letter" to all citizens from selected community leaders. This would not have the "personal touch" of individual mailings, but it would conserve program resources.

Radio and Cable Television

- While both radio and cable television are effective ways to communicate with residents, they are probably not as important in most communities as other mass media, particularly newspapers and commercial television.
- At the beginning of the planning phase, contacts should be established with station programming personnel.
- If radio and cable television are used, the program team should attempt to arrange coverage during audience peak periods, especially if time and budget resources must be expended in preparing for the broadcast.
- Public service announcements and messages are very easy to prepare, and represent a cost-effective way to communicate via these media. Radio stations are required by FCC regulations to commit a certain amount of time to public service announcements.
- Intensive coverage is not likely until after the collections have started and some "hard" results are in.

Commercial Television

- While it is difficult to involve major TV coverage until the program has started and there is something to film and results to report, this coverage should be sought whenever possible. It is certain that major station news programs are viewed by a large number of residents, both in the community and in the surrounding region.

- Contacts should be made shortly before recycling program start-up and contacts maintained with station programming staff.
- When a major station decides to cover an event, such as the recycling program start-up, the news department will send sufficient staff (reporters, technical crews) to do all of the work. However, the program team should be on hand to answer questions and facilitate special arrangements, e.g., a backdrop for a truck photograph, and community liaison.

Posters

- Posters are an effective way to communicate rapidly and directly, if necessary, with many residents.
- Posters should feature one short, catchy phrase or slogan with minimal additional copy and should be visually exciting and interesting. They should be as large as possible, consistent with the display capabilities of the stores. Posters are usually read quickly or in passing and need to be posted for as long as possible in order to reach the largest number of people.
- Posters should focus on a single aspect of the program, either the general theme (cost savings to Marblehead) or, perhaps a response to a specific resident concern ("Recycling only takes a minute").
- Posters should be considered if there is an urgent message about the program that has to be communicated quickly to residents, e.g., weather-related delays.
- The poster distribution process should be used by the program team as an opportunity to get to know the owners and staff of commercial establishments in the community and to open up another channel for feedback on the program.
- Posters should be displayed shortly (1 week) before the recycling program start-up.

Graphic Displays

- The graphic display is a useful way to communicate, in an appealing way, a substantial amount of information (benefits, operations, results) in one centralized and easily accessible location.

- A plan should be developed to keep the graphic unit continuously on display.
- Banks and libraries and special events, such as fairs, are ideal locations for the display.
- The display should effectively combine words and visual elements to communicate a message that can be absorbed by a reader in a relatively short time.
- An interesting (and more expensive) refinement is an audio component. The display would then consist solely of captioned photographs: the audio component would transmit a message (say, via headphone) that would complement and expand on the visual component. A further refinement would be a rear projector slide or film loop show coupled with the headphones or loudspeakers.

Stickers

- Stickers provide an active link to the program for all residents. In addition, identification of permanent recycling containers improves collection productivity by simplifying container identification.
- Stickers should be designed to be as large and as durable as possible, and to be visible to the collectors as they approach each house.
- Instructions should be provided, preferably on the sticker itself, to ensure that it is used on a recycling container and not, for example, as an automobile bumper sticker.
- Stickers should be distributed shortly before or just after the recycling program start-up.
- Stickers offer an interesting way to involve commercial establishments, such as utilities, in the program, by providing free mailing of the stickers. Program funds can be conserved if commercial establishments will finance the production and/or mailing of the stickers.
- Utility companies are particularly responsive in this regard because of their public service orientation, their local presence, and their frequent mailings to large numbers of residents.

- Utilities serving a multi-community area may resist funding one community's program, for fear of establishing a precedent to support other communities.
- Where more than one utility serves the community, a commitment from one provides considerable leverage to gain support from the other.

Calendar

- The calendar is something useful and valuable that residents will appreciate and use throughout the year. It is thus very effective in both the initial communication impact and also in serving the important function of sustaining community awareness.
- There are many possible themes for a calendar. The theme selected should relate both to some major aspect of the recycling program and to the individual community, as the environmental theme of the recycling program and the historical photographs were linked in the Somerville calendar.
- Printing and paper costs for a large number of calendars could severely tax program resources. Commercial contributions of money, supplies, or services could play a vital role here.
- A possible means of conserving funds and, at the same time, incorporating other program objectives would be to delegate the design and printing of the calendar to the schools. The design could be selected from competitive entries from all grades (or selected grades), and printing carried out as a major project of the local or regional vocational school.
- The calendar should include instructions on recycling program procedures and reminders to participants, as well as information about broader issues of economics, conservation, and recycling.
- The calendar should be distributed on or before December 15.
- Local volunteer groups should be used for distribution.
- Commercial establishments should be solicited to provide incentives for the volunteers, e.g., free hamburgers, movie passes.

SCHOOLS

- The school component of the community awareness program is important for two reasons:
 - the students can influence their families to participate
 - the students will develop an environmental awareness which will hopefully have an important longer-term effect on the community.
- School administration officials should be contacted at the outset of program planning to explain the program to them and gain their commitment.
- Existing curricula should be reviewed with teaching and administrative staff to determine the best fit for a recycling education component.
- Classroom materials should be developed similar to those for the Somerville program.
- Meetings should be held with school principals and teachers (elementary, secondary science, social sciences) to explain the program and their potential role in it, and to receive feedback on specific educational requirements.
- Classroom participation in recycling or waste-related activities is important in maintaining student interest. In-school recycling should be started and should include arrangements for pickup by public works personnel and other operating requirements.
- Students can be used effectively, if with some limitations, for distribution, e.g., the distribution of program start-up notices. This can be a very rapid means of communicating important program notices.
- Training should be offered to the collection force. (both recycling and mixed-refuse crews). It is vital that they understand their importance to the program, and be thoroughly familiar with the background, objectives, benefits, and operations of the program.

COMMUNITY GROUPS

- The involvement of community groups is vital to total, long-term community commitment to the program.
- Community organizations should be surveyed and their leaders contacted.
- Information packages should be prepared for the community leaders, describing all important aspects of the program.
- Meetings should be held with community leaders, and where possible, presentations given to, and feedback received from, members of the groups.
- In attempting to speak before community groups, the program team should offer a choice of brief or full presentations, so that groups with busy meeting schedules will be reached.
- Community groups are an excellent source of volunteers and can help to distribute the program workload. Youth groups are particularly useful in this regard.
- A means should be established for direct citizen feedback on the program, such as a telephone "hot line" to record and respond to complaints and suggestions.

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